D2-7
D3-7

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

June 23, 2006

Mr. Jack Garavanta, Director
Regulatory Affairs
Henkel Corporation
32100 Stephenson Highway
Madison Heights, Michigan 48071

Dear Mr. Garavanta:

SUBJECT: Response to Mixing Zone Determination Request; Former Henkel Surface Technologies Facility (Henkel); MID 058 723 867

The Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division (WHMD), has reviewed your request for a mixing zone determination for venting groundwater to Bean Creek from the Henkel facility in Morenci, Michigan and forwarded that request to the MDEQ, Water Bureau (WB). The WB responded to that request for a mixing zone determination and a copy is attached. The mixing zone request is hereby authorized.

It has been determined that vinyl chloride will not cause or contribute to water quality standards being exceeded at this time. This determination is based upon the reported maximum value of vinyl chloride (i.e., 19 micrograms per liter [ug/l]) in the submitted mixing zone request. As a contingency, if there is an exceedance of the prior reported maximum value for vinyl chloride, or for any other parameter, greater than generic groundwater surface water interface (GSI criteria), please contact this office for further direction.

In addition to the above authorization and comment, the MDEQ has the following additional comments.

1. Groundwater monitoring will need to continue until it can be shown that the groundwater concentration for vinyl chloride, or any other parameter, is below the generic GSI criteria. A groundwater monitoring program must be proposed to, and approved by, the MDEQ. The program should include semiannual monitoring. Please submit the proposed monitoring program by October 2, 2006.

2. If Henkel does not own the property all the way to the bank of Bean Creek, the zoning of the additional property will need to be determined and submitted. If the vinyl chloride plume flows under the unowned property, then a deed restriction may also be needed for that property. Please provide a status update regarding this issue by October 2, 2006.

3. The existing deed restriction needs to be modified to show that there is a physical hazard from glass (bottles from a former dairy plant) remaining in the soils on the property. Please provide a copy of the filed deed restriction as verification of this modification.

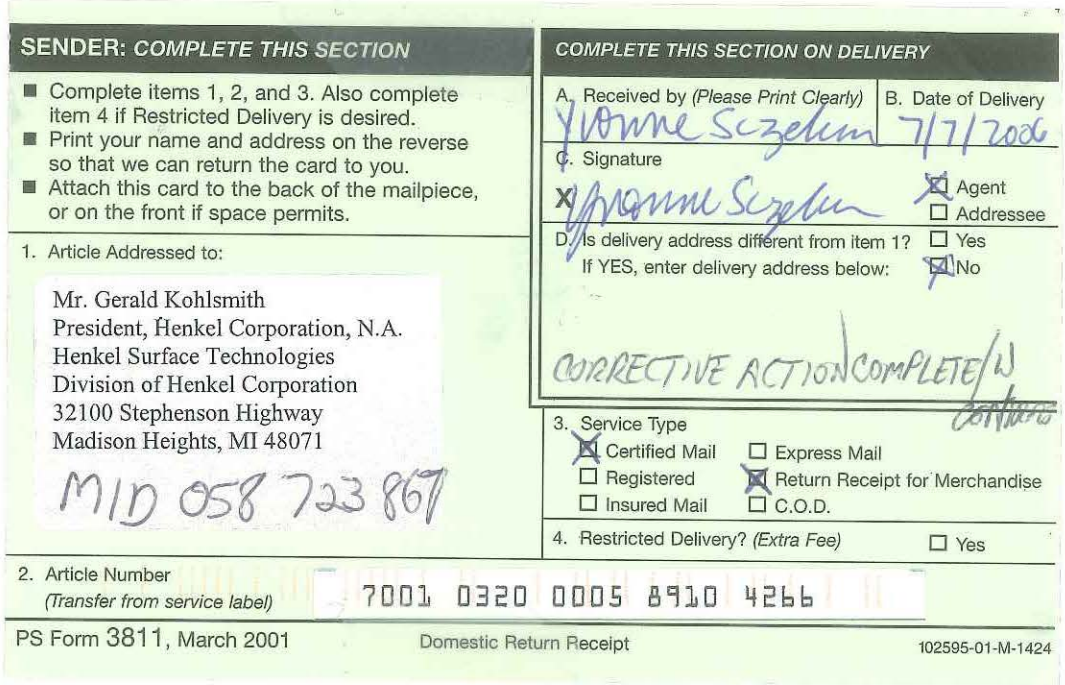
Should you have any questions regarding this letter, please contact me by telephone or by e-mail at stonera@michigan.gov.

Sincerely,

Ronald Stone, Geologist
Hazardous Waste Technical Support Unit
Hazardous Waste Section
Waste and Hazardous Materials Division
517-373-7141

Enclosure

cc: Mr. Brian Freeman, U.S. Environmental Protection Agency, Region 5
Ms. De Montgomery, MDEQ
Mr. Peter Quackenbush, MDEQ
Mr. Clay Spencer, MDEQ
Jackson District Office
Corrective Action File



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Gerald Kohlsmith
President, Henkel Corporation, N.A.
Henkel Surface Technologies
Division of Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

MID 058 723 867

COMPLETE THIS SECTION ON DELIVERY

A. Received by (Please Print Clearly) Yvonne Szczelon B. Date of Delivery 7/7/2006

C. Signature X Yvonne Szczelon ☒ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

CORRECTIVE ACTION COMPLETE/W CONTROLS

3. Service Type
☒ Certified Mail ☐ Express Mail
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☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7001 0320 0005 8910 4266

PS Form 3811, March 2001 Domestic Return Receipt 102595-01-M-1424

HONIGMAN

Honigman Miller Schwartz and Cohn LLP
Attorneys and Counselors

Kenneth C. Gold

(313) 465-7394
Fax: (313) 465-7395
kgold@honigman.com

via U.S. Mail

MID058723867

June 1, 2007

Brian P. Freeman, Senior Chemist
Enforcement and Compliance Assurance Branch
Waste, Pesticides, and Toxics Division
U. S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507

Re: Henkel Technologies, Morenci, Michigan – Declaration of Restrictive Covenants

Dear Mr. Freeman:

This is in response to your inquiry to Jeffrey Bolin of The Dragun Corporation regarding the status of the Declaration of Restrictive Covenants (DRC) for the Henkel Technologies (Henkel) property in Morenci, Michigan.

As you may recall, Henkel recorded the DRC with the Lenawee County Register of Deeds on November 29, 2005. Enclosed for your reference is a copy of my January 3, 2006 letter to you and its enclosure, a copy of the recorded DRC. Please note that Henkel determined that no changes to the DRC were warranted in response to the Michigan Department of Environmental Quality's June 23, 2006 letter to Henkel and, therefore, the enclosed copy of the DRC remains in effect.

Please contact me if you have any questions. Thank you for your cooperation.

Sincerely,

HONIGMAN MILLER SCHWARTZ AND COHN LLP

Kenneth C. Gold

KCG/krn
cc Jack Garavanta, Henkel Technologies, w/enc.
Glenn Young, Esq., Henkel Corporation, w/enc.
Jeffrey Bolin, The Dragun Corporation, w/enc.

Enclosure

DETROIT.2647690.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

June 27, 2006

REPLY TO THE ATTENTION OF: **DE-9J**

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Gerald Kohlsmith
President, Henkel Corporation, N.A.
Registered Agent for:
Henkel Surface Technologies
Division of Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Re: **RCRA Corrective Action Complete with Controls**
Henkel Surface Technologies, Inc.
EPA ID No.: MID 058 723 867

Dear Mr. Kohlsmith:

The United States Environmental Protection Agency (U.S. EPA) has issued its Final Decision to select the remedy for contamination at the former Henkel Surface Technologies Morenci, Michigan facility (Henkel). Attached are copies of the Statement of Basis, and the Final Decision/Response to Comments documents affirming this decision. Henkel entered into an Administrative Order on Consent under §3008h of RCRA with the U.S.EPA in January of 2005 which required cleanup of the area formerly known as Waste Area #6. Soil removal, disposal and subsequent confirmation sampling activities commenced during 2005.

U.S. EPA published its Statement of Basis in March of 2005, in which land use restrictions were cited as the proposed remedy for the site. This Statement of Basis was published in the State Line Observer Newspaper, and was also broadcast twice on March 30 during morning and afternoon drive time on WQTE Radio. A public comment period of 45 days followed, in keeping with US EPA's public participation responsibilities. No written public comments were received by U.S. EPA, and the Final Decision and Response to Comments was issued on June 15, 2006. Thus, this corrective action has been completed with institutional controls.

In addition to the remedy of this Final Decision and Response to Comments, Henkel will still need to adhere to state law by following any requirements set forth by the Michigan Department of Environmental Quality (MDEQ). In June of 2006, the MDEQ notified Henkel of those state requirements in writing.

Please note, however, that this Final Decision does not preclude us from requiring further action in the future if we obtain any information indicating that such action is needed to protect human health or the environment. Nothing in this letter shall be interpreted as prohibiting us

from taking any actions necessary to protect human health and the environment, including ordering additional corrective action if necessary.

If you have any questions, or if we can be of any further assistance, please do not hesitate to contact me at (312) 353-2720

Sincerely,

Brian P. Freeman, Senior Chemist and Project Manager
RCRA Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division
U.S. Environmental Protection Agency Region 5

cc: Jack Garavanta, Director of Regulatory Affairs, Henkel Corp.
Andre Daugavietis, Associate Regional Counsel, US EPA
Ron Stone, Clay Spencer, Pete Quackenbush MDEQ

Waste, Pesticides and Toxics Division

Type of Document: Final Decision & Response to Comments

Name of Document (FacilityName & Location): Henkel Surface Technologies, Morenci, MI

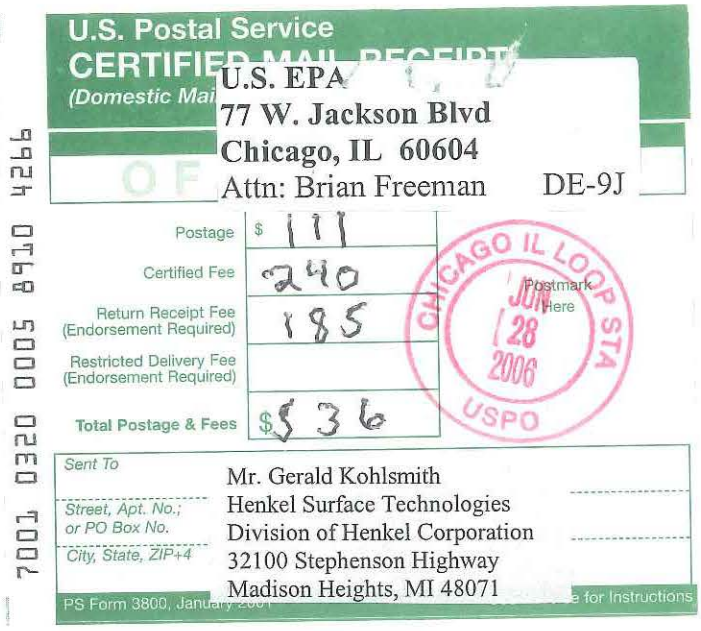
Document # (EPA ID#) Final_Decision Henkel_2.doc **Originator/Phone:** 312-353-2720

NOTE: Originator and first level supervisor are responsible for assuring that documents are in plain language. All other reviewers should consider plain language in their reviews. See the plain language checklist on the reverse side of this sheet.

Date	Name	Secretary/Chief Initials
5/30/2006	Brian P. Freeman Author	
5/30/06	George Hamper ECAB Section Chief	
6/6/06	Andre Daugavietis Asst. Reg. Counsel	AD
6/7/06	Sandra Lee, Chief, ORC Section	See Attached for other Comments BS
6/13/06	Gerald Phillips, Corrective Action Manager	
6/15/06	Margaret M. Guerriero, Director, Waste Pesticides and Toxics Div.	
	IL/MI State Coordinator	
	IN/MN State Coordinator	
	OH/WI State Coordinator	
	Congressional/Intergovernmental	
	Relation Officer (AL/ORAC)	
	Deputy RA	
	Regional Administrator	

Return for Mailing _____ **Correction Required**

REMARKS/COMMENTS


U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mai
U.S. EPA
77 W. Jackson Blvd
Chicago, IL 60604
Attn: Brian Freeman DE-9J
Postage $ 1.11
Certified Fee 2.40
Return Receipt Fee (Endorsement Required) 1.85
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $5.36
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JUN 28 2006
USPO
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Sent To
Mr. Gerald Kohlsmith
Henkel Surface Technologies
Division of Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
PS Form 3800, January
for Instructions
7001 0320 0005 8910 4266

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

RCRA FINAL DECISION AND RESPONSE TO COMMENTS

FOR

Henkel Surface Technologies
Morenci, Michigan

June 2006

FINAL DECISION AND RESPONSE TO COMMENTS
SELECTION OF FINAL REMEDIAL ALTERNATIVE
FOR
Henkel Surface Technologies
Morenci, MI

Introduction

This Final Decision and Response to Comments (FDRTC) is presented by the United States Environmental Protection Agency (U.S. EPA) for the former Henkel Surface Technologies facility (HST) located in Morenci, MI. Attached to this document is the previously issued Statement of Basis (Attachment I). The Statement of Basis provided the proposed remedy and was made available for public review and comment from March 30, 2006 to May 15, 2006. The U.S. EPA did not receive any comments on the Statement of Basis. This FDRTC selects the final remedy to be implemented at HST based on the Administrative Record.

Assessment of the Site

The response action documented in this FDRTC is necessary to protect human health and the environment.

Selected Remedy

The U.S. EPA has selected the following remedy to address the contaminated soils and groundwater at the Site:

Land Use Restrictions (Declaration of Restrictive Covenants, Lenawee County, MI) for the remaining site property. Site property is identified as Lenawee County TAX ID HM0-305-0330-00. The restrictions shall provide that:

> a) The owner shall restrict the use of the property to uses compatible with commercial, II, III or IV land use categories, as defined by MDEQ pursuant to Section 20120a(1) of Part 201 of NREPA, as in effect as of November 22, 2005, or other use that is consistent with the assumptions and basis for the cleanup criteria established pursuant to Section 20120a(1)(b),(d),(g) or (i). The owner must also comply with MDEQ's Part 201 requirements regarding physical hazards. This will involve a deed notice that broken

glass and china existing in the subsurface soil of the creek bank in the area formerly known as Waste Area 6 could present a hazard to construction workers. Cleanup criteria for land use-based remedial action plans are located in the Government Documents Section of the State of Michigan Library.

b) The owner shall prohibit the construction of wells or other methods or devices on the property to extract groundwater from the shallow aquifer under the property for consumption, irrigation, or any other use unless approved by MDEQ. Short term de-watering for construction purposes is permitted provided that such de-watering is conducted in accordance with all applicable local, state and federal laws and regulations.

The MDEQ Water Bureau is in the process of approving a groundwater mixing zone analysis under State Regulations implementing the Clean Water Act, since the concentration of vinyl chloride in the groundwater discharging from the site to Bean Creek currently exceeds the MDEQ groundwater/surface water interface criteria. The approval will likely require the owner to conduct semiannual groundwater monitoring and reporting to MDEQ to verify compliance with the conditions set by the MDEQ, along with a financial assurance requirement. In addition, the MDEQ Remedial Action Team (RAT) also recommended that the deed restriction for land use put in place as a result of the US EPA §3008h Consent Order be modified to include a broken glass hazard as a result of former dairy farm activities conducted there. This modification is in process.

Public participation

A public notice announcing the public comment period was published in the State Line Observer newspaper on March 29, 2006 and was also broadcast on local radio station WQTE (95.3 FM) on March 29, 2006 between 6 a.m. and 10 a.m. A forty-five (45) day public comment period was held from March 30, 2006 and May 15, 2006. The U.S. EPA did not receive any comments.

Administrative Record

The Administrative Record upon which the final remedy was selected is available at The Office of the City Clerk, Morenci, MI, at 118 Orchard Street, Morenci, Michigan and the Waste Pesticides and Toxics Division Records Center of the U.S. EPA, Region 5 office, at 77 W. Jackson Boulevard, 7th floor, Chicago, Illinois.

Declaration

Based on the Administrative Record compiled for this corrective action, U.S. EPA has determined that the selected remedy for HST is appropriate and is protective of human health and the environment.

Date 6/15/06

Margaret M. Guerriero, Director
Waste Pesticides and Toxics Division
U.S. Environmental Protection Agency
Region 5

Attachment

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Liane J. Shekter Smith, Assistant Division Chief, Waste and Hazardous Materials Division

FROM: Glen Schmitt, Surface Water Assessment Section, Water Bureau

DATE: May 2, 2006

SUBJECT: Henkel Surface Technologies, Morenci, Michigan
Request for Mixing Zone-Based Criteria

We have examined the information provided in your April 11, 2006, request to provide mixing zone-based criteria for a groundwater contamination site located in the NW ¼ of the NE ¼ of Section 06, T09S, R02E in Lenawee County. Contaminated groundwater is migrating to Bean Creek with a calculated discharge rate of 0.21 cubic feet per second (cfs) at the groundwater/surface water interface (GSI). The lowest monthly 95 percent exceedance, harmonic mean, and 90Q10 flows for the Bean Creek near this location are 6.8 cfs, 36 cfs, and 11 cfs, respectively. The plume is contaminated with vinyl chloride.

Based on the information provided, vinyl chloride is not expected to exceed the chronic limit of 570 micrograms per liter (ug/L) or the acute limit of 17,000 ug/L.

Please feel free to contact me at 517-241-0910 or e-mail me at schmittgp@michigan.gov if you have questions or comments concerning this memo.

gs:rm
cc: Jon Russell, Chief, Jackson District Office, Water Bureau
Eric Alexander / Venting Groundwater Files, Water Bureau

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGIONS 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF: DE-9J

March 23, 2006

Ms. Renee Schroeder
City Clerk and Administrator
The City of Morenci, Michigan
118 Orchard Street
Morenci, MI 49256

Dear Ms Schroeder:

The United States Environmental Protection Agency (U.S. EPA) is seeking input from the community on a Statement of Basis for Contaminated Soils and Groundwater at the former Henkel Surface Technologies site. The Statement of Basis documents the environmental condition at the Henkel site, outlines remediation alternatives for contaminated soils and groundwater proposed by Henkel, and presents the U.S. EPA's proposed remedy selection. Final selection of the remedy will be made following public comment.

The proposed corrective action is issued under the provisions of Section 3008(h) of the Resource Conservation and Recovery Act of 1976 as amended 42 U.S.C. Section 6928(h).

A public notice will appear on Wednesday, March 29, 2006 in the State Line Observer and on WQTE Radio, during the morning and afternoon drive times. You can obtain more information by login in the web at:

http://www.epa.gov/reg5rcra/wptdiv/permits/index.htm.

U.S. EPA has set a public comment period of forty-five (45) days from March 30 to May 15, 2006 to encourage public participation. A copy of the Statement of Basis is enclosed for your information, and for the public to review.

During the comment period, U.S. EPA will accept written comments on the proposed remedy and alternatives. If significant comments are received, U.S. EPA will schedule a public meeting. After consideration of the comments received, U.S. EPA will select a final remedy and document their decision. If you have any questions regarding this matter, please contact me at (312) 353-2720.

Sincerely yours,

Brian P. Freeman, Senior Chemist
Corrective Action Project Manager
RCRA Enforcement and Compliance Assurance Branch
United States Environmental Protection Agency
freeman.brian@epa.gov

Enclosure

cc: Clay Spencer, MDEQ (w/o enclosure)
Ron Stone MDEQ (w/o enclosure)
Jeffrey Bolin, The Dragun Corporation (w/o enclosure)
Jack Garavanta, Henkel Corporation (w/o enclosure)

Waste and Hazardous Materials Division
Remediation Advisory Team - RAT Agenda

Room: Rachel Carson (DEQ-WHMD1-NA) **DATE:** 2/22/2006

Location: Constitution Hall

Time Business Meeting: 9:30 am

Business Agenda: 1. 201 Delegation memo

Project Agenda: 10:00 am - Henkel Surface Technologies - Brian Freeman, EPA, to present RAP for this Hazardous Waste Unit by Conference Phone (Rachel Carson Room phone: 517-241-2140). Clay Spencer, Pete Quackenbush and Ron Stone have also been involved with this site.

11:00 am - Former GE Detroit Apparatus Service Center, at 18075 Krause St., Riverview, MI. They are going through closure of a Hazardous Waste Unit, but are requesting GWNIAA for the closure. This will be for a review of the GWNIAA request.

Time Adjourn 12:00 pm

2/21/06
George-
This is the conference # and notice of meeting. Do you want to go over this stuff today? We're on for 9 AM. I'll call U?
Brian

Waste and Hazardous Materials Division
Remediation Advisory Team - Single Entry Report

Site: Henkel Surface Technologies **District:** Jackson **County:** Lenawee

Review Type: Initial Consultation **Clean-up Type:** 201 Limited Commercial **Program:** Part 111 of 1994 P.A. 451

Meeting Date: 2/22/2006 **RA TEAM:** Dave Slayton, Margie Ring, Kimberly Tyson, Jim Arduin, Pat Brennan, De Montgomery, Becky Kocsis, Deb Taylor, Ron Stone.
By conference phone: Brian Freeman, EPA and George Hamper, EPA

Project Description: Historical uses of the site included manufacture and storage of chemical surface coating products by numerous owner/operators. No industrial operations are currently conducted on the site.

Notes:
1. They are proposing soils removal in waste area 6, and deed restrictions for limitation of land use to commercial/industrial, and deed restriction prohibiting use of shallow groundwater.
2. The EPA got involved in 2000 and in 2002 the site was ordered to do a site wide evaluation. The facility feels they have completed all required activities.
3. The EPA had 3 concerns left:
   a) soil contamination outside of fence line (area 6)
   b) groundwater data was old
   c) sediment samples will still be needed
4. Since the EPA concerns were outlined, the site proceeded with some soil removal in area 6, and did resample the groundwater. Vinyl chloride (at 19-30 ppb) is the contaminant of concern in the groundwater, for both DWC and GSI exceedance. GW vents to Bean Creek which is a hydraulic boundary for DW pathway concerns.
5. The sediment samples are still showing lead at levels of 400 -727 ppm in the creek bed wall. The leach test run on the bank soils showed that lead would leach at less than 3 ppb.
6. A mixing zone request will be submitted for the vinyl chloride going into Bean Creek.
7. An administrative order was signed by Henkel in January 2005. This should cover the legally enforceable agreement requirements.

Recommendations:
1. The mixing zone request should be submitted to Water Division.
2. The facility will need a waiver request under 705(6).
3. There is a monitoring compliance period that goes with the mixing zone approval. The monitoring will most likely be semi-annual. (Mixing zone authorization is for 5 years)
4. A contingency plan will also be needed, to address failure to meet the mixing zone.
5. Correction to cleanup criteria evaluation worksheets are needed. Number 3 and 10 on page 7 and same items on page 9 should be changed to WC. On page 7, item 2 should be changed to AN, also change none to deed restriction. On page 5, financial assurance mechanism required should be yes, and abandonment of monitor wells should be yes, depending on mixing zone.
6. Zoning should be confirmed and that the zoning runs to the edge of the creek.
7. A deed restriction may be needed if there is a strip of land between property and creek.
8. The deed restriction should to be revised to show physical hazards from remaining buried glass, if not already identified in the restriction description.
9. The existing administrative order will probably need to be amended or a legally enforceable agreement will be needed to cover remediation activities.
10. Ron Stone to provide assistance to EPA staff regarding request forms, ongoing reviews, deed restrictions, and review options of LEAs.

Chair's Signature: Pat Brennan **Date Signed:** 3/14/2006

Pat Brennan

Waste and Hazardous Materials Division
Remediation Advisory Team - RAT Agenda

Room: Rachel Carson (DEQ-WHMD1-NA) **DATE:** 2/22/2006

Location: Constitution Hall

Time Business Meeting: 9:30 am

Business Agenda: 1. 201 Delegation memo

Project Agenda: 10:00 am - Henkel Surface Technologies - Brian Freeman, EPA, to present RAP for this Hazardous Waste Unit by Conference Phone (Rachel Carson Room phone: 517-241-2140). Clay Spencer, Pete Quackenbush and Ron Stone have also been involved with this site.

11:00 am - Former GE Detroit Apparatus Service Center, at 18075 Krause St., Riverview, MI. They are going through closure of a Hazardous Waste Unit, but are requesting GWNIAA for the closure. This will be for a review of the GWNIAA request.

Time Adjourn 12:00 pm

HONIGMAN

Honigman Miller Schwartz and Cohn LLP
Attorneys and Counselors

Kenneth C. Gold

(313) 465-7394
Fax: (313) 465-7395
kgold@honigman.com

MID 058 723 867

via U.S. Mail

January 3, 2006

Brian P. Freeman, Senior Chemist
Enforcement and Compliance Assurance Branch
Waste, Pesticides, and Toxics Division
U. S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507

Re: Henkel Technologies - Approved Final Corrective Measures Proposal, Morenci, Michigan Site

Dear Mr. Freeman:

As requested in your October 25, 2005 letter to Jeffrey Bolin of The Dragun Corporation, enclosed is a copy of the recorded "Declaration of Restrictive Covenants" that was filed with and recorded by the Lenawee County Register of Deeds. The recordation of the Declaration of Restrictive Covenants is in accordance with the approved Final Corrective Measures Proposal, dated October 12, 2005, which was prepared in accordance with Paragraph V.D. of the February 2005 Agreed Administrative Order ("AO") between Henkel and U.S. EPA.

It is our understanding that U.S. EPA's receipt of this information fulfills Henkel's obligations under the AO and that U.S. EPA is preparing a Statement of Basis to commence and complete the public notice obligations, after which (assuming no significant comments are received), the site will go to closure.

Sincerely,

HONIGMAN MILLER SCHWARTZ AND COHN LLP

Kenneth C. Gold

Enclosure

cc Jack Garavanta, Henkel Technologies, w/encl.
Glenn Young, Esq., Henkel Corporation, w/encl.
Jeffrey Bolin, The Dragun Corporation, w/encl.

DETROIT.2017599.2

DECLARATION OF RESTRICTIVE COVENANTS

THIS DECLARATION OF RESTRICTIVE COVENANTS ("**Restrictive Covenants**") has been recorded with the Lenawee County Register of Deeds for the purpose of protecting public health, safety and welfare and the environment.

Henkel Technologies, a division of Henkel Corporation, N.A., a Delaware corporation ("Henkel"), having an address of 32100 Stephenson Highway, Madison Heights, MI 48071, has received approval from the U.S. Environmental Protection Agency ("**EPA**") for a Final Corrective Measures Proposal ("**FCMP**") that includes land use-based cleanup criteria as defined and set forth in Sections 20120a(1)(b), (d), (g) and/or (i) of Part 201 of the Natural Resources and Environmental Protection Act ("**NREPA**"), 1994 PA 451, as amended, MCL 324.20101 *et seq.*, for the environmental remediation associated with the property located in the City of Morenci, County of Lenawee ("**Property**") more particularly described as:

See Exhibit A for legal description of Property.

Property Tax ID Numbers of Property: **HM0-305-0330-00**

The entire Property is subject to the use restrictions set forth herein.

As used herein, the term "Owner" shall mean at any given time the then-current title holder of all or any portion of the Property.

NOW THEREFORE, Henkel hereby imposes restrictions on the Property and covenants and agrees that:

1. Owner shall restrict the uses of the Property to those uses compatible with the industrial or commercial II, III or IV land use categories as defined by the Michigan Department of Environmental Quality ("**MDEQ**") pursuant to Section 20120a(1) of Part 201 of NREPA, as in effect as of the Effective Date, or other use that is consistent with the assumptions and basis for the cleanup criteria established pursuant to Section 20120a(1)(b), (d), (g) or (i). Cleanup criteria for land use-based remedial action plans are located in the Government Documents section of the State of Michigan Library.

2. Owner shall prohibit construction of wells or other devices on the Property to extract groundwater from the shallow aquifer under the Property for consumption, irrigation, or any other use unless approved by EPA or MDEQ. Short-term dewatering for construction purposes is permitted provided the dewatering, including management and disposal of the groundwater, is conducted in accordance with all applicable local, state, and federal laws and regulations.

26.00 cw.

3. Owner shall grant to EPA and its designated representatives the right to enter the Property at reasonable times upon not less than twenty-four (24) hours advance notice (except in the event of emergency and except as may be otherwise permitted by law or authority of the EPA, in which event only such advance notice as may be reasonable under the circumstances or as may be required by law, including no notice, shall be required) for the purposes of determining and monitoring compliance with this Restrictive Covenant.

4. EPA may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of competent jurisdiction.

5. This Restrictive Covenant shall run with the Property and shall be binding upon the Owner, all future Owners, successors, lessees or assigns and their authorized agents, employees, or persons acting under their direction and control. This Restrictive Covenant may be modified or rescinded only with the written approval of EPA or MDEQ.

6. If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof. All such other provisions shall continue unimpaired in full force and effect.

7. The undersigned person executing this Restrictive Covenant is Owner, or has the express written permission of Owner, and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.

IN WITNESS WHEREOF, the said Owner of the above-described Property has caused this Restrictive Covenant to be executed on this 22 day of November, 2005 (the "**Effective Date**").

HENKEL TECHNOLOGIES
a division of Henkel Corporation, N.A.
a Delaware corporation

By: Gerald E. Kohlsmith
Printed Name: Gerald E. Kohlsmith
Its: President

'TATE OF MICHIGAN)
) SS:
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 22nd day of November, 2005, by Gerald E. Kohlsmith, the President of Henkel Technologies, a division of Henkel Corporation, N.A., a Delaware corporation, on behalf of the corporation.

Sally Ann Costa
Printed Name: Sally Ann Costa
Notary Public, Macomb County
State of Michigan
My Commission Expires: July 3, 2008
Acting in the County of Oakland

DRAFTED BY AND WHEN RECORDED RETURN TO:

Kenneth C. Gold, Esq.
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226-3506

Register of Deeds, Lenawee Co. DEC 26.00
5058185
Page: 3 of 5
11/29/2005 03:16P
L-2312 P-604

EXHIBIT A

LEGAL DESCRIPTION OF PROPERTY

Land in the City of Morenci, Lenawee County, Michigan, described as follows:

Beginning at the Northwest corner of the intersection of Mill Street (variable width) and Main Street (74.25 feet wide), also being the Southeast corner of Lot 34, ASSESSOR'S PLAT No. 2, according to the plat thereof as recorded in Liber 7 of Plats, Page(s) 21, 22, 23 and 24, Lenawee County Records; thence along the North line of Main Street (74.25 feet wide) South 87 degrees 35 minutes 00 seconds West 50.00 feet to the Southwest corner of said Lot 34, thence along the West line of said Lot 34, North 00 degrees 50 minutes 00 seconds East 141.60 feet, thence South 89 degrees 24 minutes 00 seconds East 20.00 feet, thence North 01 degree 05 minutes 00 seconds East 219.96 feet to the South line of Lot 33 of ASSESSOR'S PLAT NO. 2, thence along said South line South 85 degrees 30 minutes 00 seconds West 354.73 feet to the Southwest corner of said Lot 33, thence along the West line of said Lot 33 North 10 degrees 03 minutes 00 seconds East 306.40 feet to the Southwest corner of Lot 32 of ASSESSOR'S PLAT No. 2; thence along the West line of said Lot 32, North 11 degrees 57 minutes 00 seconds East 272.71 feet to the Northwest corner of said Lot 32, thence along the North line of said Lot 32, North 60 degrees 35 minutes 09 seconds East 26.79 feet; thence North 08 degrees 07 minutes 32 seconds East 126.12 feet; thence North 60 degrees 35 minutes 00 seconds East 234.00 feet; thence South 29 degrees 25 minutes 00 seconds East 100.00 feet to the North line of said Lot 32, thence along the said North line of Lot 32, North 60 degrees 35 minutes 00 seconds East 223.26 feet to the Northeast corner of said Lot 32; thence along the East line of said Lot 32 South 00 degrees 52 minutes 00 seconds West 60.00 feet to the Northwest corner of Lot 5 of KINNEY'S ADDITION, according to the plat thereof as recorded in Liber 68 of Deeds, Page 812, Lenawee County Records, thence South 87 degrees 27 minutes 00 seconds West 24.00 feet; thence South 00 degrees 52 minutes 00 seconds West 133.30 feet to the North line of Congress Street (49.5 feet wide); thence along said North line, South 87 degrees 27 minutes 00 seconds West 171.04 feet; thence South 00 degrees 52 minutes 00 seconds West 116.70 feet; thence South 87 degrees 27 minutes 00 seconds West 7.00 feet to the West line of said Mill Street (variable width); thence along said West line South 00 degrees 52 minutes 00 seconds West 278.39 feet to the North line of vacated Mill Street; thence along said North line North 87 degrees 27 minutes 00 seconds East 69.88 feet to the Northwest corner of Lot 19 of KINNEY'S ADDITION, also being the Southwest corner of the intersection of Mill Street and Union Street (49.5 feet wide); thence along the South line of Union Street, North 87 degrees 38 minutes 38 seconds East 148.00 feet; thence South 00 degrees 52 minutes 00 seconds West 131.90 feet; thence North 87 degrees 36 minutes 12 seconds East 155.84 feet to the Northeast corner of Lot 78 of FRANKLIN CAWLEY'S ADDITION as recorded in Liber 50 of Deeds, Page 801, Lenawee County Records, thence along the East line of said Lot 78, South 01 degrees 01 minutes 35 seconds West 120.29 feet to the Southeast corner of said Lot 78, also being the North line of Locust Street (49.5 feet wide), thence along said North line South 87 degrees 33 minutes 47 seconds West 160.50 feet to the East line of vacated Locust Street, thence along said East line, South 07 degrees 39 minutes 33 seconds East 49.71 feet to the South line of said Locust Street and the West line of an alley (16 feet wide); thence along said West line South 00 degrees 55 minutes 00 seconds West 121.12 feet to the North line of an alley (16 feet wide); thence along said North line South 87 degrees 35 minutes 00 seconds West 221.37 feet to the West line of said Mill Street, thence along said West line South 01 degrees 02 minutes 00 seconds West 155.09 feet to the Point of Beginning; Excepting therefrom the following:

\ parcel of land being that part of vacated Mill Street (Liber 869 of Deeds, Page 168) Lenawee County Records, Lot 19 and part of Lot 20 of the Plat of KINNEY'S ADDITION as recorded in Liber 68 of Deeds, Page 812, Lenawee County Records, and Lots 75, 76, 77, 78, part of vacated Locust Street and part of Lot 74 of FRANKLIN CAWLEY'S ADDITION as recorded in Liber 50 of Deeds, Page 801, Lenawee County Records, further described as beginning on the West line of Mill Street 155.09 feet North 01 degrees 02 minutes 00 seconds East from the Southeast corner of Lot 34 of ASSESSOR'S PLAT NO. 2 as recorded in Liber 7 of Plats, Pages 21, 22, 23 and 24, Lenawee County Records, (also being the intersection of the West line of Mill Street with the North line of Main Street); thence North 01 degrees 02 minutes 56 seconds East 423.63 feet continuing along the west line of said Mill Street as previously vacated; thence North 87 degrees 27 minutes 00 seconds East 69.88 feet to a set rerod at the Northwest corner of said Lot 19 of KINNEY'S ADDITION; thence North 87 degrees 38 minutes 38 seconds East 148.00 feet along the South line of Union Street to a cut "+" in concrete; thence South 00 degrees 52 minutes 00 seconds West 131.90 feet to a set rerod; thence North 87 degrees 53 minutes 55 seconds East 155.80 feet (recorded as North 87 degrees 36 minutes 12 seconds East 155.84 feet) to a found iron pipe at the Northeast corner of said Lot 78; thence South 01 degrees 04 minutes 36 seconds West 120.15 feet (recorded as South 01 degrees 01 minutes 35 seconds West 120.29 feet) to a found iron pipe at the Southeast corner of said Lot 78 also being the North line of Locust Street (49.5 feet wide); thence along said North line of Locust Street South 87 degrees 34 minutes 18 seconds West 160.53 feet (recorded as South 87 degrees 33 minutes 47 seconds West 160.50 feet) to the East Line of vacated Locust Street and a found iron pipe; thence South 07 degrees 39 minutes 33 seconds East 49.71 feet to a set rerod; thence South 0 degrees 55 minutes 00 seconds West 121.12 feet to a set P.K. nail; thence South 87 degrees 35 minutes 45 seconds West 221.39 feet (recorded as South 87 degrees 35 minutes 00 seconds West 221.37 feet) to the point of beginning. Containing 2.56 acres.

DETROIT.2005765.3

5058185
Page: 5 of 5
11/29/2005 03:16P
Register of Deeds, Lenawee Co. DEC 26.00 L-2312 P-604

HONIGMAN

Honigman Miller Schwartz and Cohn LLP
Attorneys and Counselors

Kenneth C. Gold

(313) 465-7394
Fax: (313) 465-7395
kgold@honigman.com

via U.S. Mail

January 3, 2006

Brian P. Freeman, Senior Chemist
Enforcement and Compliance Assurance Branch
Waste, Pesticides, and Toxics Division
U. S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507

Re: Henkel Technologies - Approved Final Corrective Measures Proposal, Morenci, Michigan Site

Dear Mr. Freeman:

As requested in your October 25, 2005 letter to Jeffrey Bolin of The Dragun Corporation, enclosed is a copy of the recorded "Declaration of Restrictive Covenants" that was filed with and recorded by the Lenawee County Register of Deeds. The recordation of the Declaration of Restrictive Covenants is in accordance with the approved Final Corrective Measures Proposal, dated October 12, 2005, which was prepared in accordance with Paragraph V.D. of the February 2005 Agreed Administrative Order ("AO") between Henkel and U.S. EPA.

It is our understanding that U.S. EPA's receipt of this information fulfills Henkel's obligations under the AO and that U.S. EPA is preparing a Statement of Basis to commence and complete the public notice obligations, after which (assuming no significant comments are received), the site will go to closure.

Sincerely,

HONIGMAN MILLER SCHWARTZ AND COHN LLP

Kenneth C. Gold

Enclosure

cc Jack Garavanta, Henkel Technologies, w/encl.
Glenn Young, Esq., Henkel Corporation, w/encl.
Jeffrey Bolin, The Dragun Corporation, w/encl.

DETROIT.2017599.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

DE-9J

July 28, 2005

Mr. Jeffrey A. Bolin, M.S., CHMM
Environmental Scientist
Dragun Corporation
30445 Northwestern Highway - Suite 260
Farmington Hills, MI 48334

RE: Limited Soil Removal Report
Henkel Surface Technologies
Morenci, MI Site

Dear Mr. Bolin:

The U.S. Environmental Protection Agency Region 5 (U.S. EPA) has received the Limited Soil Removal Report, dated July 15, 2005, citing the removal of soils from Waste Area 6 of the Henkel Morenci Site. We have reviewed the report, and based on our telephone conversation on July 22, 2005, U.S. EPA is offering tentative approval subject to the completion of one noted deficiency below:

Deficiency: In Appendix D of the Report, all "Onyx Non-Hazardous Special Waste Manifests" should contain the printed name of the Authorized Agent receiving the waste at its destination, as well as the signature. Please submit three (3) sets of these corrected forms comprising of Appendix D to U.S. EPA, for inclusion in the Report.

Once received, these updated manifests can be appended to your submitted Report copies, and final approval can be issued. However, please continue other efforts such as the Description of Current Conditions Report, as this interim approval is sufficient for continued work on this and/or other areas of the project.

If you have any questions about this correspondence, please call me at (312)353-2720. Any legal questions regarding the above issues at the site can be addressed to Andre Daugavietis, Associate Regional Counsel, at (312) 886-6663.

Sincerely,

Brian P. Freeman
Senior Chemist, Corrective Action Project Manager
U.S. EPA Region 5, RCRA Enforcement & Compliance Assurance

cc: George Hamper, Chief, WPTD/ECAB Corrective Action Section
Pete Quackenbush, MDEQ
Andre Daugavietis, Esq. C-14J
Jack Garavanta, Henkel Corporation

Andre Daugavietis

02/10/04 12:13 PM

To: Brian Freeman/R5/USEPA/US@EPA
cc:
Subject: Henkel Surface Technologies draft order

brian: finally, here are hst's comments. i have gone thru them very quickly. some are reasonable. others i am not sure of. i will start revising the order with the reasonable comments. lets discuss your reactions to the comments after you get a chance to review them. -andre

----- Forwarded by Andre Daugavietis/R5/USEPA/US on 02/10/2004 12:10 PM -----

"Gold, Kenneth C." <KGold@honigman.com>

02/09/2004 06:00 PM

To: Andre Daugavietis/R5/USEPA/US@EPA
cc: Glenn.Young@henkel.com, JBolin@dragun.com, Jack.Garavanta@hstna.com
Subject: Henkel Surface Technologies draft order

Dear Andre,

We have received your February 6, 2004 email. HST does not necessarily understand it and we certainly do not agree with it. Rather than divert our focus from our continuing, primary goal - to resolve this matter in an appropriate way that is satisfactory to both parties - we will simply refer you to my January 30, 2004 email to you, which addressed and rebutted the same issues.

As promised in that email, HST is prepared to provide its technical comments. They are as follows:

HST's Technical Comments on Draft Order:

Section III. Statement of Purpose.

This section lists four reasons for the Order:

1. specified corrective actions outside Waste Area 6.

2. specified sampling of sediments in Bean Creek.

3. provide a Description of Current Conditions (DOCC) report.

4. propose final corrective measures.

The fourth reason was never discussed with HST or agreed upon by HST. 50?

Section IV. A. Findings of Fact.

#4 States the "Respondent is a generator..." Respondent was a generator. OK, OK, OK already.

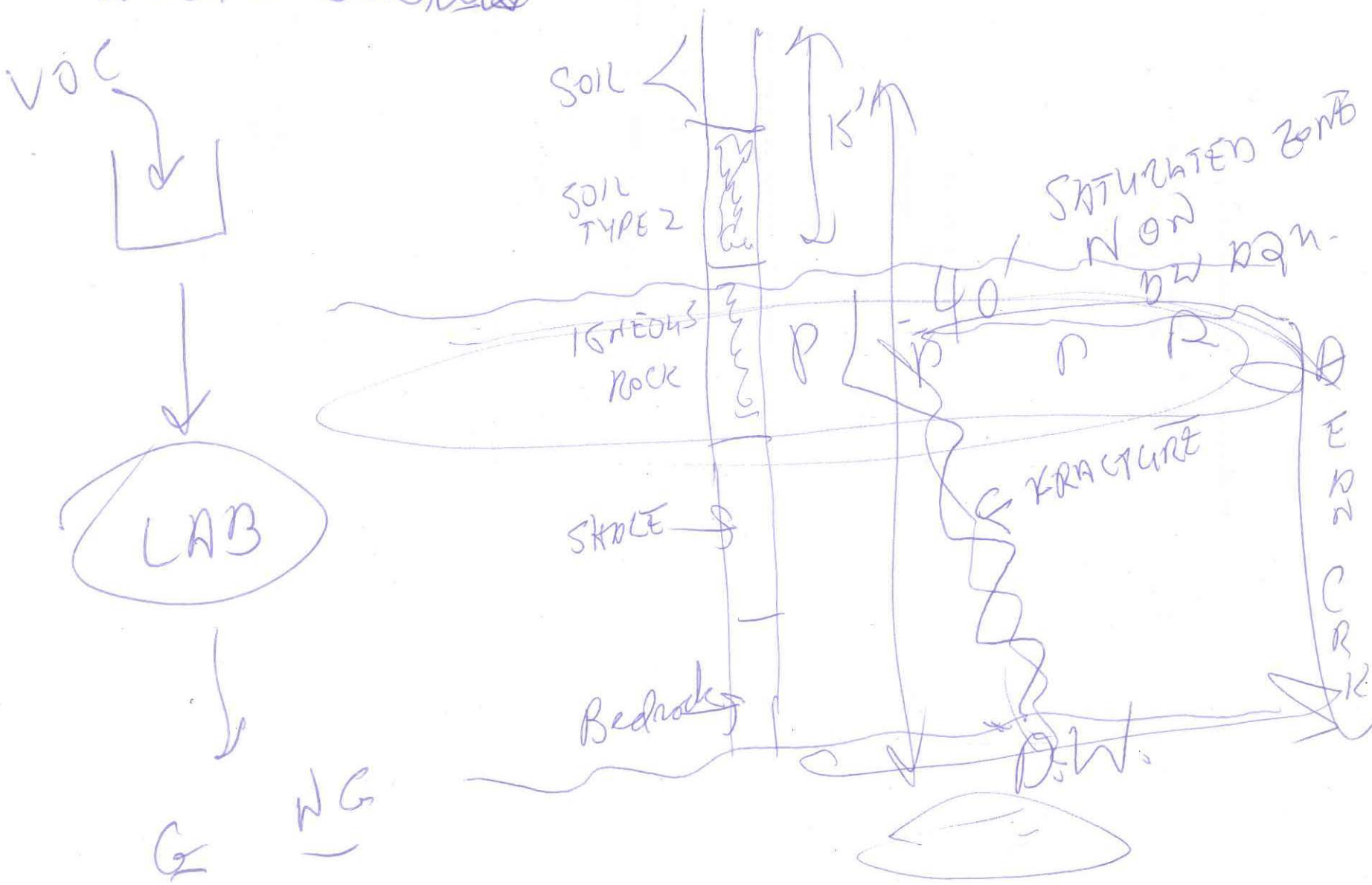
#5 HST never treated hazardous waste. Yeh Yeh Yeah.

#9 "Certain wastes and constituents found at the Facility are hazardous wastes..." The Facility has been closed since 1988 and testing of soil at the Facility (mid 1990s) has shown that no hazardous wastes are present. Yes, but it is still true that haz. wastes exist there. Plume of contamination

#11 No mention of Ford Motor Company ownership prior to Henkel Corporation.

OK

~~[illegible]~~, ± SOIL LITHOLOGY



Henkel

Henkel Surface Technologies

December 21, 2000

Mr. Tom Manning
Corrective Action Project Manager
Corrective Action Section
USEPA - Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Sent via Overnight Mail

Subject: Summary of Meeting with the USEPA
Former Morenci Michigan Facility
Morenci, Michigan
MID 058 723 867

Dear Mr. Manning:

This letter provides a summary of the December 7, 2000, meeting that was conducted between representatives of the United States Environmental Protection Agency (USEPA) and Henkel Surface Technologies (HST) at the USEPA Region 5 offices in Chicago, Illinois. The meeting was conducted to discuss potential Corrective Action (CA) activities pursuant to the Resource Conservation and Recovery Act (RCRA) at the former Morenci, Michigan facility owned by HST. The following people were present at the meeting:

Representing HST:	Representing USEPA:
Jack Garavanta	Tom Manning
Juliette Richter	George Hamper
Robert Budnik	
Jeffrey A. Bolin	

The following significant topics were discussed at the meeting:

- USEPA policy and agenda regarding Achievement of Environmental Indicators (EIs)

  "Current Human Health Exposures Under Control"
  "Migration of Contaminated Groundwater Under Control"

- Current status and achievement of EIs at the subject site

- Use of cleanup criteria pursuant to Part 201 of Michigan's Natural Resources and Environmental Protection Act (NREPA)

Henkel Corporation
32100 Stephenson Highway, Madison Heights, Michigan 48071
Telephone: (248) 583-9300

Henkel

Henkel Surface Technologies

- Current status of the draft Voluntary Corrective Action Agreement (VCAA)
- Flexibility of the language in the draft VCAA
- Michigan Department of Environmental Quality's (MDEQ) roles and responsibilities

As a result of these discussions, the USEPA and HST agreed to the following:

- Tom Manning will contact the MDEQ to discuss the status of site closure relating to soils
- Postponement of the implementation of the VCAA between USEPA and HST
- HST will provide a letter describing a course of action to address an additional groundwater sampling event at the subject property. A separate Work Plan will be prepared describing the groundwater sampling and testing and will be provided for USEPA review by February 28, 2001. The Work Plan will be developed consistent with the Region 5 USEPA Quality Assurance Project Plan (QAPP) Policy dated May 1998.

If there are any additions / deletions to this summary, or if you have any questions regarding its contents, please do not hesitate to contact me at (248) 589 – 4830.

Very truly yours,

HENKEL SURFACE TECHNOLOGIES

Jack Garavanta

Jack Garavanta
Director, Regulatory Affairs
and Product Acceptance

cc: J. Bolin – Dragun Corporation
R. Budnik – HST
J. Richter – Henkel Corporation

12/12/01 EMAIL

Brian-we received a copy of the letter addressed to you from Jack Garavanta of HST and dated November 28, 2001. There were some statements in Mr. Garavanta's letter that are inaccurate-or at lea st misleading.

His statement that no VOCs were detected in soil-in the past-altho ugh true-in our minds doesn't prove a lot because a) only the seven hazardous waste storage areas were sampled-this is a relatively sm all percentage of the entire site-and since MDEQ was working with HST on CLOSURE of these areas-and not on sitewide corrective action (as E PA now is doing)-there is still a large percentage of the site that w e have NO soil or groundwater data from; b) all the VOC sampling do ne in the past by MDEQ/HST were PRE-METHANOL method.

Also-while true-that VOCs have only been detected in one well-ther e are only (to our knowledge) four wells onsite. Mr. Garavanta's implic ation that the VOCs could be coming from offsite (an old landfill and possible auto repair shop located just upgradient of the site) may be accurate-but with only one upgradient well-would take some more groundwater investigation to prove.

Mr. Garavanta also said in this letter that (page 6): "All of the applicable verification samples contained concentrations of lead l ess than the residential direct contact criterion of 400 mg/kg. Based on this information and the previously submitted reports to MDEQ, the closure requirements outlined in the revised Closure Plan submitte d to MDEQ during 1993 were achieved." We have not agreed that they hav e closed the site yet-because we have not verified that the old fenceline-was the same as the property line. If it is the same-th ey were excavating contaminated soils offsite-because their excavatio n

went well past their old fenceline. Verification samples were the
n
taken in this area (past the fenceline) that contained levels of L
ead
well over 400mg/kg. We have contacted district staff (Martin Jaco
bson)
to see if we can verify where the actual property line is-but our
suspicion is that it goes all the way to Bean Creek-and if this is
the
case-their closure is not complete because lead contaminated soils

remain above applicable criteria. Mr. Jacobson is also checking t
o see
of there is a local ordinance that restricts use of shallow ground
water
in Morenci, and what the local zoning is that includes the HST sit
e.

To my knowledge we did not receive the most recent groundwater res
ults
(from this past summer) that evidently you had them produce. Coul
d you
either fax us this information-or just give us a synopsis of the
results??? Fax number is below. There may be other inaccuracies
in
the letter-I have only mentioned a few above.

Clay Spencer, CHMM
Environmental Quality Analyst
Michigan Department of Environmental Quality
Waste Management Division
Hazardous Waste Program Section
Technical Support Unit
phone: 517-373-7968 fax: 517-373-4797
email: spencerc@michigan.gov
address: P.O. Box 30241, Lansing, MI 48909-7741

Henkel

Henkel Surface Technologies

November 28, 2001

Mr. Brian Freeman
Corrective Action Project Manager
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: Henkel Surface Technologies
Morenci, Michigan
MID 058 723 867

Dear Mr. Freeman:

In recent discussions between representatives of United States Environmental Protection Agency (U.S. EPA) Region 5 and Henkel Surface Technologies (HST), you have indicated that U.S. EPA Region 5 intends to issue a consent order to HST under the U.S. EPA's corrective action authority in connection with the above-referenced Site. As HST understands it, the consent order would require HST to investigate the Site for the source of low levels of trichloroethene (TCE) and vinyl chloride detected in one groundwater monitoring well located at the Site.

For the reasons set forth below, HST respectfully requests that U.S. EPA reconsider its position and conclude that HST may proceed with a land-use-based cleanup regulated by the Michigan Department of Environmental Quality (MDEQ) under Part 201 of the Natural Resources and Environmental Protection Act, M.C.L. § 324.20201 *et seq.* (Part 201).

Specifically, as is discussed below, HST believes that it has demonstrated that: (1) the limited area of groundwater contamination at the Site is not a threat to migrate off-site at levels above cleanup criteria established by MDEQ under Part 201; (2) U.S. EPA has explicitly accepted MDEQ's Part 201 criteria as an appropriate basis for cleanups, and U.S. EPA's own RCRA corrective action guidance encourages land-use-based cleanups; and (3) HST has adequately investigated the Site and, because the TCE and vinyl chloride do not pose a current or future risk to human health or the environment, any search for the source of the TCE and vinyl chloride would not reveal information that would lead to a reduction in risk but would be a needless waste of resources.

1. Brief Background

HST has worked cooperatively with the MDEQ Waste Management Division (WMD) since 1988 pursuing closure of this Site. A Closure Plan was approved by the MDEQ in 1993. Subsequently, numerous investigations of soil and groundwater quality have been conducted, the results of which were presented in four reports: (1) Interim Soil Report dated January 31, 1995;

Henkel Corporation
32100 Stephenson Highway, Madison Heights, Michigan 48071 Telephone: (248) 583-9300

(2) Groundwater Investigation Report dated March 27, 1995; (3) Soil Characterization Report dated October 27, 1997; and (4) Groundwater Sampling Report, dated January 28, 1999.

Based on results presented in these report, the MDEQ concurred in a letter dated March 8, 1999, that metals in soil at the subject property are not leaching to groundwater. Therefore, with the exception of Hazardous Waste Storage Area #6, that contained soil with concentrations of lead in excess of the direct contact cleanup criterion of 400 mg/kg, the other storage areas were considered closed. Closure of Hazardous Waste Storage Area #6 required a limited removal of soil containing lead at concentrations above 400 mg/kg or the installation of an exposure barrier. To address these concerns, approximately 1,560 cubic yards of soil were excavated from this area and disposed of off site at a Type II landfill. These activities were submitted to the MDEQ in a Limited Soil Removal Report dated February 14, 2000.

HST was contacted by Mr. Tom Manning of the U.S.EPA on September 30, 1999 and he visited the Site on October 19, 1999. Based on his visit to the Site and discussions with the MDEQ, Mr. Manning was satisfied that the Human Exposure Environmental Indicator was satisfied at the Site; however, he felt that current groundwater data was required to further evaluate the Migration of Contaminated Groundwater Environmental Indicator. Between May and October 2000, HST and U.S.EPA discussed drafts of a Voluntary Corrective Action Agreement (VCAA). These discussions culminated in a meeting at the U.S.EPA offices in Chicago on December 7, 2000. The U.S.EPA was represented by Mr. Manning and Mr. George Hamper.

As a result of this meeting, the USEPA and HST agreed to the following:

- Tom Manning would contact the MDEQ to discuss the status of Site closure relating to soils.

- Implementation of the VCAA between U.S.EPA and HST would be postponed because U.S.EPA agreed that the additional sampling might provide the necessary information to resolve its concerns.

- HST would provide a letter describing a course of action to address an additional groundwater sampling event at the subject property. A separate Work Plan would be prepared describing the groundwater sampling and testing and would be provided for U.S.EPA review by February 28, 2001. The Work Plan would be developed consistent with the Region 5 U.S.EPA Quality Assurance Project Plan (QAPP) Policy dated May 1998. However, because the sampling event was relatively minor a full QAPP was not required.

- Based on the results of the groundwater sampling, HST and U.S.EPA would discuss the necessity of entering into a VCAA.

The aforementioned "Work Plan for Groundwater Monitoring" was submitted to Mr. Manning on February 28, 2001 and approved by him on June 4, 2001. The approved groundwater sampling was conducted on June 21, 2001 and a Groundwater Monitoring Report was submitted to the U.S.EPA on September 4, 2001. It was concluded in the Groundwater Sampling Report

that based on the results of the groundwater-sampling event, VOCs are not present in the groundwater at unacceptable concentrations based on applicable exposure pathways. Accordingly, the USEPA's Environmental Indicators at this site have been achieved.

Contradictory to the December 7th meeting whereby it was agreed that based on the results of the groundwater sampling, HST and U.S. EPA would discuss the necessity of entering into a VCAA, you contacted me on October 17, 2001, and stated the following: (1) U.S. EPA disagrees with the conclusions of the Groundwater Monitoring Report; (2) it was your opinion that HST was not cooperating; and (3) since no VCAA had been signed, a consent order would be issued.

During our October 23, 2001 conference call, we discussed your concerns regarding the conclusions presented in the report titled, "June 2001 Groundwater Sampling, Henkel Surface Technologies Facility, Morenci, Michigan, MID 058 723 867," dated August 30, 2001 (the August 2001 Report). The August 2001 Report was prepared based on initial discussions with the U.S. EPA during a meeting on December 7, 2000, and subsequent U.S. EPA approval of a work plan dated February 26, 2001.

During our discussion on October 23, 2001, you reiterated your position regarding the Site as stated on October 17, 2001. At the culmination of the conference call, you indicated that it was U.S. EPA's intent to issue a consent order to HST to further investigate the "groundwater contamination" at the Site.

On November 13, 2001, I called you and requested the name and telephone number of the U.S. EPA attorney who would be assigned to handle the consent order. I felt this information was necessary to allow HST to appropriately prepare for the consent order. In your reply, you informed me that an attorney had not yet been assigned and stated that, even after an attorney has been assigned, you would not notify HST of the attorney's name until after the consent order is issued.

Because U.S. EPA's current position regarding the Site contradicts: (1) U.S. EPA's own previous positions; (2) the results of substantial investigations of the Site over the past ten plus years that indicate that the Site poses no threat to human health or the environment; and (3) the voluntary and cooperative progress that had been achieved between the U.S. EPA and HST up to this point, HST does not believe that a consent order would be warranted for this Site.

2. **The Site Meets U.S. EPA's Environmental Indicators of "Migration of Contaminated Groundwater Under Control" and "Current Human Exposures Under Control"**

In U.S. EPA's "Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action" (September 2001) (U.S. EPA Handbook), U.S. EPA sets forth two "environmental indicators" for evaluating the need for investigation and/or cleanup of RCRA corrective action sites. These environmental indicators, established pursuant to the Government Performance and Results Act (GPRA), are: (1) control of the migration of chemicals in groundwater and (2) control of human health exposures.

As is explained below, HST has demonstrated that both environmental indicators have been achieved at the Site. This is true even though two chemicals (TCE and vinyl chloride) in groundwater samples collected from one monitoring well (MW-3) in June 2001 were detected at levels that slightly exceeded the applicable drinking water criteria. HST evaluated the environmental indicators using USEPA's Memorandum dated February 5, 1999 regarding Interim-Final Guidance for RCRA Corrective Action Environmental Indicators (EI Memorandum) as a basis.

A. Documentation of Environmental Indicator Determination for Migration of Contaminated Groundwater Under Control

The extensive investigation of soil and groundwater conducted at the Site has never detected *any* VOCs in the soil and has never detected significant concentrations of VOCs in groundwater. Prior to the August 2001 Report, these investigations were performed as required under the Approved Closure Plan, dated November 24, 1993, and the results were documented in four reports, dated January 1995, March 1995, October 1997 and January 1998.

During the recent (June 2001) groundwater sampling, four groundwater samples were collected and submitted to a laboratory and tested for the presence of VOCs using USEPA Method 8260. In addition, one duplicate groundwater sample, designated MW-200, was collected from monitoring well MW-3 and tested for the presence of VOCs. One trip blank was prepared and tested for the presence of VOCs utilizing USEPA method 8260. Documentation of this sampling event was presented in the August 2001 Report.

Review of the laboratory data reveals that VOCs at concentrations in excess of the laboratory detection limits were detected only in the groundwater samples collected at monitoring well MW-3. No other concentrations of VOCs exceeded any other cleanup criteria or screening level.

Of the VOCs detected in MW-3, only TCE and vinyl chloride exceeded MDEQ's Part 201 generic cleanup criteria and screening levels for residential and "commercial I" land use, as set forth in MDEQ's Environmental Response Division (ERD) Operational Memorandum #18: Part 201 Generic Cleanup Criteria Tables, dated June 7, 2000 (MDEQ-ERD Op. Memo 18). In addition, the concentrations of VOCs detected in groundwater exceeded the industrial cleanup criteria – which, for TCE and vinyl chloride, are identical to the residential cleanup criteria. The industrial criteria are relevant due to potential construction activities planned on the Site and the industrial zoning of the Site.

In addition, only vinyl chloride in groundwater sample MW-200 (duplicate of MW-3) was detected at a concentration that exceeded the residential drinking water cleanup criterion.

Specifically, MDEQ's residential and industrial drinking water cleanup criteria for TCE and vinyl chloride in groundwater are 5 µg/L and 2 µg/L, respectively. TCE and vinyl chloride were detected in groundwater sample MW-3 at 5.3 µg/L and 6.5 µg/L, respectively, and vinyl chloride was detected at 5.8 µg/L in groundwater sample MW-200.

The use of Part 201 cleanup criteria is consistent with the MDEQ – U.S. EPA Memorandum of Understanding (MOU), dated November 2000, which states, in relevant part, that "Region 5 has reviewed and evaluated the clean-up standards and related processes for investigation and remediation under Part 201 of the NREPA and has determined that the MDEQ's use of the Part 201 cleanup standards and related processes, as used in the state's hazardous waste management program under Part 111 of the NREPA, are an acceptable way of achieving the objectives of the authorized Part 111 Corrective Action program."

In the August 2001 Groundwater Sampling Report, HST evaluated six different groundwater exposure pathways and associated cleanup criteria for the chemicals detected in the groundwater at the Site. The six groundwater exposure pathways evaluated include: (1) Groundwater Contamination Risks Posed from Residential Drinking Water Exposure, (2) Groundwater Contamination Risks Posed from Industrial Drinking Water Exposure, (3) Groundwater Contamination Risk that May Impact Surface Water Quality, (4) Groundwater Contamination Risks Posed from Residential Indoor Air Inhalation Exposure, (5) Groundwater Contamination Risks Posed from Industrial Indoor Air Inhalation Exposure, and (6) Groundwater Contamination Risks Posed from Direct-Contact Exposure. In addition, the groundwater data were compared to the following three criteria and screening levels: (1) Water Solubility, (2) Flammability and Explosivity Screening Level, and (3) Acute Inhalation Screening Level.

Based on these comparisons, only the residential and industrial drinking water exposure cleanup criteria were exceeded. Based on analysis of the Site consistent with the U.S. EPA EI Memorandum, the migration of this groundwater is defined and poses no risk to human health or the environment, for at least the following reasons:

(1) The City of Morenci (City) is served by a municipal water supply that is provided by the City. The City's municipal wells are located approximately 1000 feet west-southwest from the Site, on the other side of Bean Creek. The City's wells are screened in the lower confined aquifer that is isolated from the shallow groundwater unit by a 55-foot to 75-foot thick clay unit. The Site is underlain by (a) a sand and a silty sand unit, (b) a clay and silt unit, (c) a silty clay unit, and (d) a sand and gravel unit (D'Appolonia, 1983). At the ground surface is sand and a silty sand unit that is 13 to 18 feet thick and is designated the upper aquifer. An approximately 50-foot clay unit separates the upper aquifer (sand and silty sand unit) from the lower confined aquifer (sand and gravel unit). The lower confined aquifer is encountered at depths of approximately 85 and 95 feet at the City's municipal wells. The lower confined aquifer consists of sand and gravel units and is at least 20 feet thick. The lower confined aquifer is under artesian pressure (Earth Tech, 1997). The lower confined aquifer is effectively isolated from the upper unconfined aquifer by the clay unit and the artesian pressure. Based on this information, the strong upward hydraulic gradient precludes the downward migration of any chemicals from the upper aquifer to the lower aquifer and thus the vertical migration of contaminated groundwater is controlled.

(2) The upper saturated unit at the Site discharges to Bean Creek, which borders the Site to the west. Bean Creek is a hydraulic boundary with respect to the flow of groundwater in the upper saturated unit, thus creating a defining edge to the horizontal migration of chemicals in groundwater. Furthermore, the concentrations of chemicals detected in groundwater do not

exceed groundwater/surface water interface (GSI) criteria under Part 201, as set forth in MDEQ-ERD Op. Memo 18. Based on this information, contaminated groundwater will not flow beyond Bean Creek and therefore the horizontal migration of contaminated groundwater is controlled.

(3) This evaluation is consistent with the U.S. EPA Handbook, which states: "According to EPA guidance, a facility could potentially achieve this indicator [migration of contaminated groundwater under control] if the regulator determines that the discharge of contaminated groundwater into surface water is currently acceptable." (U.S. EPA Handbook, p. 2.5) The U.S. EPA Handbook then refers the reader to the applicable State "specific groundwater cleanup levels based on protecting surface water bodies." (*Id.*) HST meets these cleanup levels because the groundwater contamination levels do not exceed MDEQ's GSI criteria under Part 201, as set forth in MDEQ-ERD Op. Memo 18.

B. Documentation of Environmental Indicator Determination for Current Human Exposures Under Control

As noted above, the extensive investigation of soil and groundwater conducted at the Site never detected *any* VOCs in soil and has never detected significant concentrations of VOCs in groundwater.

A limited soil removal was conducted during 1999 to achieve the closure requirements of the approved Closure Plan relating to human exposure to lead in the soil. The Dragun Corporation directed the removal of soil from former Hazardous Waste Storage Area #6 and collected verification samples to confirm that a sufficient volume of soil was removed. These activities were conducted between August 19, 1999, and October 15, 1999, in accordance with the approved Work Plan dated April 14, 1999.

In general, these activities included (1) excavation and off-site disposal of approximately 1,560 cubic yards of soil and (2) collection and laboratory testing of 85 verification soil samples for the presence of total lead. The final excavation measured approximately 160 feet by 80 feet and varied in depth between approximately two and four feet. Approximately 1,560 cubic yards of soil were excavated from this area and disposed of off site at a Type II landfill. The excavation was backfilled with clean sand fill material.

All of the applicable verification samples contained concentrations of lead less than the residential direct contact criterion of 400 mg/kg. Based on this information and the previously submitted reports to MDEQ, the closure requirements outlined in the revised Closure Plan submitted to MDEQ during 1993 were achieved.

As previously discussed, TCE (5.3 µg/L) and vinyl chloride (6.5 µg/L) in groundwater sample MW-3 and vinyl chloride (5.8 µg/L) in groundwater sample MW-200 were detected at concentrations in excess of the applicable residential and industrial drinking water cleanup criteria of 5 µg/L and 2 µg/L, respectively.

Based on analysis of the Site, consistent with the USEPA EI Memorandum, there are no current or potential human exposures to this contaminated groundwater for at least the following reasons

(1) The most recent U.S. EPA listing of the Michigan GPRA RCRA Baseline List of Facilities, as available on U.S. EPA's website and dated October 12, 2001, states that the Site has met this environmental indicator. If U.S. EPA believes that circumstances have changed to justify a change in its prior conclusion, U.S. EPA should, at a minimum, document the reasons for this change and provide HST with an opportunity to review and respond before issuing a consent order inconsistent with its own current GPRA RCRA listing of record for the Site.

(2) As previously noted, the City is served by a municipal water supply. The City's wells are screened in the lower confined aquifer that is isolated from the shallow groundwater unit by a 55-foot to 75-foot thick clay unit. The lower confined aquifer is effectively isolated from the upper unconfined aquifer by the clay unit and the artesian pressure. Based on this information, the strong upward hydraulic gradient precludes the downward migration of any chemicals from the upper aquifer to the lower aquifer and thus the vertical migration of contaminated groundwater and potential for human exposure is controlled.

(3) The City's municipal well is tested semi-annually for the presence of VOCs. No VOCs have been detected in the municipal well water to date. This result is expected considering the previously discussed hydrogeologic conditions at the Site.

(4) The current zoning of the Site is industrial and HST has been involved in discussions with the City for over four years regarding redevelopment of the Site in an industrial capacity. Based on the existence and location of the City's water supply, the zoning and the future plans for the Site, there is no current or potential future use of shallow groundwater at the Site. Further, as part of its proposed permanent remedy for the Site, HST will prepare and record with the property deed a Restrictive Covenant that prohibits groundwater use at the Site. This remedy is consistent with local wishes and needs of the City.

The use of a restrictive covenant is consistent with the MDEQ – U.S. EPA November 2000 MOU, which states, "The clean-up criteria specified in Part 201 of the NREPA provide for land-use based cleanups, which may entail restrictive covenants or other restrictions in order to meet the criteria specified for each land-use category."

(5) The upper saturated unit at the Site discharges to Bean Creek, which borders the Site to the west. Bean Creek is a hydraulic boundary with respect to the flow of groundwater in the upper saturated unit, thus creating a defining edge to the horizontal migration of chemicals in groundwater. Accordingly, the migration of these chemicals in groundwater beyond the boundary of the site will not occur and the use of a groundwater use restriction on the Site will effectively prevent human exposure.

C. Other Relevant Factors

In addition to the foregoing, the following factors also demonstrate why the TCE and vinyl chloride contamination, barely above drinking water standards in one monitoring well, do not warrant further investigation or remediation at the Site:

(1) Previous industrial activities at the Site utilized mainly metals-based compounds. Chemicals containing VOCs were not a major component of the manufacturing processes. Furthermore, if a significant source of TCE and vinyl chloride was present at the Site, it is highly likely that the VOCs would have been detected during the previous extensive soil sampling at the Site. Such sampling occurred in the former hazardous waste storage pads at the Site, which is where significant volumes of wastes containing VOCs (if generated) would have been stored. The fact that no such substances have been detected in any of the 60 plus soil samples taken at the Site and analyzed is compelling evidence that no significant on-Site source ever existed.

(2) As noted, the TCE and vinyl chloride have been detected in the groundwater only at MW-3. This monitoring well is near the extreme southwestern corner of the Site, cross-gradient to the rest of the Site. It is unlikely that a significant on-Site source of these substances would result in the low levels of TCE and vinyl chloride only at this one monitoring well at the edge of the Site, and not even in nearby MW-4, located cross-gradient only 75 feet to the north and more centrally located to the rest of the Site.

(3) Based on information available in U.S. EPA and MDEQ databases, an old landfill and possible auto repair shop were located just upgradient of the Site. These locations are likely sources of the VOCs and may be the source of a VOC plume whose northern edge is passing along the southern boundary of HST's Site.

(4) As noted, the Site was closed on January 4, 1992 and all Site buildings were demolished in mid 1993 through early 1994. Therefore, there is obviously no current source of TCE or vinyl chloride on the Site. Nor is there any likelihood of an increase in contaminant levels from Site-sourced contamination, if any. This is perhaps best demonstrated by the lack of any meaningful change in contaminant levels in MW-3 from 1994 to June 2001.

3. Conclusion

Based on the foregoing, HST respectfully requests that U.S. EPA reconsider its position regarding the Site and conclude that HST may proceed with a land-use based cleanup under the auspices of MDEQ. HST also requests a meeting with U.S. EPA to discuss this request and the foregoing information. Please call me at (248) 589-4830 to schedule such a meeting or if you have any questions regarding the foregoing information.

Very truly yours,

HENKEL SURFACE TECHNOLOGIES

Jack Garavanta
Director, Regulatory Affairs
and Product Acceptance

cc: Glenn Young, Henkel Corporation – Legal Department
George Hamper, U.S. EPA
Kenneth C. Gold, Esq., Honigman Miller Schwartz and Cohn
Jeffrey Bolin, The Dragun Corporation
Russ Sutherland, Mayor of Morenci
Delores M. Montgomery, MDEQ WMD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

October 19, 2001

REPLY TO THE ATTENTION OF:
DW-8J

Mr. Jack Garavanta
Director, Regulatory Affairs
and Product Acceptance
Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Re: Correction Action
Henkel Corporation
MID 058 723 867

Dear Mr. Garavanta:

The United States Environmental Protection Agency (U.S. EPA) would like to address the current status of corrective action at the Henkel Surface Technologies, Morenci, MI site.

AS you know, the Voluntary Corrective Action (VCA) agreement is one of the first measures utilized by the Resource Conservation and Recovery Act (RCRA)/Enforcement and Compliance Assurance Branch (ECAB) to address corrective action. In September of 1999, ECAB diverted some of it's workload to corrective action overseers in the RCRA Permitting Branch. These overseers were given the authority to propose to certain high priority corrective action sites, throughout the Region, that they address corrective action at their site's using the VCA agreement. Henkel Surface Technologies has had the opportunity to use this tool to address corrective action at it's Morenci, MI site. To date, the VCA has not been signed.

As I indicated to you in a fax cover letter dated June 4, 2001, without a signed VCA agreement, I do not have the authority to address the results. I have noted, however, that a problem still does exist at the Morenci, MI site. The sampling and analysis conducted during the summer of 2001 clearly indicates volatile organic compounds still exist at the site, particularly at MW-3.

Because there is no VCA agreement and groundwater contamination exists that must be addressed, I have returned oversight of corrective action activities back to ECAB. If you have not already been contacted by ECAB personnel, you will be shortly. I will no longer be the contact person for the Henkel Surface Technologies site in Morenci, MI.

If you have any questions regarding this letter or the enclosure, please contact me at (312) 886-6943.

Sincerely,

Thomas Manning,
U.S. EPA, Environmental Scientist

cc: section file

May 3, 2001

Conference Call w/HST

Participants:	Jack Garavanta of HST and Tom Manning of EPA
Phone # for call:	(248) 589-4830
Purpose:	Discuss findings of Groundwater sampling workplan and new version of the Voluntary Correction Agreement.
EPA's Standpoint:	The sampling plan has significant deficiencies. The deficiencies are significant only w/in the realm of a full RCRA Facility Investigation. U.S. EPA will not go around and around on reviewing and commenting on this document. It's U.S. EPA's position that there is <u>not</u> an enormous environmental concern at the site. Nothing prevents HST from carrying out the sampling plan but it might as well count for something.

3377

Henkel

Henkel Surface Technologies

October 5, 2000

Mr. Tom Manning
Corrective Action Project Manager
Corrective Action Section
USEPA - Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Sent via Overnight Mail

Subject: Voluntary Corrective Action Agreement for Henkel Corporation MID 058 723 867

Dear Mr. Manning:

Henkel Surface Technologies (HST) and its consultant The Dragun Corporation, have reviewed the final version of the above subject document, dated September 20, 2000. Unfortunately, none of the proposed changes, submitted by HST on June 29, 2000, were incorporated in this document.

Therefore, as we discussed during our phone conversation of September 29, 2000, HST respectfully requests a meeting with the agency to resolve the current impasse. Please call me with some dates that would be open and acceptable to the U.S. EPA. HST would be represented by Bob Budnik, Manager, Regulatory Affairs; Jeff Bolin, The Dragun Corporation, and myself. I can be reached directly at (248) 589 – 4830.

Very truly yours,

HENKEL SURFACE TECHNOLOGIES

Jack Garavanta
Director, Regulatory Affairs
and Product Acceptance

Henkel Corporation
32100 Stephenson Highway, Madison Heights, Michigan 48071
Telephone: (248) 583-9300

Fax

Name:	**Jack Garavanta**
Organization:	Henkel Corporation
Fax:	(248) 589-4826
Phone:	(248) 589-4830
From:	**Tom Manning, U.S. EPA, (312) 886-6943**
Date:	September 20, 2000
Subject:	Voluntary Corrective Action
Pages:	13

Comments: [Jack, here is the latest version of the voluntary corrective action agreement that I have. Please let me know by phone of any thing that is not right. I'm trying to get this finalized by September 30th.]

Jack, I understand yours in a meeting — I'll call tomorrow morning.

××× TRANSMISSION REPORT ×××

SEP-20-00 13:57 ID:

JOB NUMBER	893		
INFORMATION CODE	OK		
TELEPHONE NUMBER	912485894826		
NAME(ID NUMBER)	248 589 4826		
START TIME	SEP-20-00 13:53		
PAGES TRANSMITTED	013	TRANSMISSION MODE	EMMR
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THIS TRANSMISSION IS COMPLETED.

LAST SUCCESSFUL PAGE 013

Fax

Name: Jack Garavanta
Organization: Henkel Corporation
Fax: (248) 589-4826
Phone: (248) 589-4830
From: Tom Manning, U.S. EPA, (312) 886-6943
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Comments: [Jack, here is the latest version of the voluntary corrective action agreement that I have. Please let me know by phone of any thing that is not right. I'm trying to get this finalized by September 30th.]

Jack, I understand you're in a meeting — I'll call tomorrow morning.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

September 20, 2000

REPLY TO THE ATTENTION OF:

DW-8J

Mr. Jack Garavanta
Director, Regulatory Affairs
and Product Acceptance
Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Re: Voluntary Correction Action
Agreement for Henkel Corporation
MID 058 723 867

Dear Mr. Garavanta:

The United States Environmental Protection Agency (U.S. EPA) would like to thank you for your proposals on the Draft Voluntary Corrective Action language, dated June 29, 2000.

After careful review of your proposals, U.S. EPA has developed a final version of the agreement (enclosed). All of the changes proposed by you were considered and the resulting language reflects the essential elements of the corrective action program that must be included in the agreement.

If this agreement appears in order to you, please sign, copy, and return the original agreement to me as soon as possible. Your corrective action activities should start immediately.

If you have any questions regarding this letter or the enclosure, please contact me at (312) 886-6943.

Sincerely,

Thomas Manning

Thomas Manning,
U.S. EPA, Environmental Scientist

enclosure

Voluntary Corrective Action Agreement between The United States Environmental Protection Agency and Henkel Surface Technologies

I. Purpose

The United States Environmental Protection Agency (U.S. EPA) and Henkel Surface Technologies (HST), collectively referred to as the Parties, establish this agreement for HST to work independently and voluntarily to further investigate, and as necessary stabilize and remediate releases of hazardous wastes or hazardous constituents at or from the facility located at 322 West Main Street, Morenci, MI. The Parties believe that HST will appropriately, efficiently and effectively investigate and, as necessary, remediate the facility on an accelerated basis by following the procedures and guidelines in this Agreement. This Agreement will have fulfilled its purpose and will terminate upon written acknowledgment by U.S. EPA that HST has completed its corrective action obligations under RCRA at the facility.

II. Background

The HST facility has been shut down since 1990. Since then the buildings and equipment have been removed and an empty lot is all that exists at the site. Efforts were initiated by the owner to obtain a RCRA Closure Approval from the Michigan Department of Environmental Quality (MDEQ) for the regulated units. Based on the results of sampling done as part of closure requirements, the soil had been impacted by VOCs. Source hotspots have been removed. HST is currently waiting for results on it's Closure Report from the MDEQ. Further, U.S. EPA has determined that human exposure to risk at the site is under control.

Groundwater has also been impacted at the site. Groundwater sampling results from 1998 indicate that VOCs are present in groundwater at levels above the Michigan Part 201 Drinking Water Criteria.

U.S. EPA and HST expect that HST will investigate, and as necessary remediate, all releases of hazardous wastes or constituents at or from the facility under the guidelines established in this Voluntary Corrective Action Agreement (Agreement).

HST will prepare the following documents in preparation of corrective action activities at the facility:

a) Voluntary RCRA Facility Investigation (RFI) Workplan

III. GENERAL PROVISIONS, ROLES & RESPONSIBILITIES, STABILIZATION ACTIVITIES, FINAL CORRECTIVE MEASURES AND REPORTS

A. General Provisions

This Agreement incorporates the definitions in RCRA or in regulations promulgated or guidance developed under RCRA, unless otherwise specified.

HST will use appropriate risk considerations to determine and propose facility-specific target levels and final clean-up levels for U.S. EPA's review and approval. Target levels (also referred to as risk-based screening levels) are initial chemical concentration levels which U. S. EPA and HST will use to guide decisions on selecting chemicals of concern and conducting further investigation on contaminated environmental media at the site. Clean-up levels will include risk-based goals and may also be influenced by additional factors such as remedial technology limits, analytical detection limits, and cost factors.

HST's risk assessment will estimate risk under reasonable maximum exposure for both current and reasonable expected future use scenarios. ~~HST will conduct the risk assessment according to the Risk Assessment Guidance for Superfund (RAGS).~~ HST will use appropriate conservative screening values when screening to determine whether further investigation or action is required~~.~~, consistent with Part 201 of the Michigan Natural Resources and Environmental Protection Act (NREPA: P.A.; 451 of 1994, as amended). ~~Appropriate conservative screening values include but are not limited to those derived from Federal Maximum Contaminant Levels, U.S. EPA's Soil Screening Guidance. User's Guide, U.S. EPA Region 9 Preliminary Remediation Goals, Michigan Department of Environmental Quality Part 201 Generic Cleanup Criteria and Screening Levels, ASTM RBCA (PS 104-98) methods, U.S. EPA Region 5 Ecological Screening Levels (formerly known as EDQLs), U.S. EPA Region 5 Risk-Based Screening Levels, and RAGS.~~

If facility-specific target levels are exceeded, HST will undertake prompt action to ensure protection of human health and the environment.

HST will collect all samples according to the Region 5 RCRA Quality Assurance Project Plan (QAPP) Policy (April 1998) as appropriate for the facility. Further, these samples will be sufficient to: 1) identify releases, consistent with the

objectives of this Agreement, 2) identify the extent of the releases, characterize such releases, and characterize release source areas to the extent necessary to assess the risk to human health and the environment, and 3) determine the need for and design of any stabilization and final corrective measures. U.S. EPA may, at its discretion, audit laboratories selected by HST. HST will purchase and analyze any Performance Evaluation (PE) samples that U.S. EPA selects for Constituents of Concern.

To the extent possible, HST will notify U.S. EPA in writing at least 15 working days prior to beginning each separate phase of field work performed under this Agreement and at least five (5) working days prior to collecting samples. At the request of U.S. EPA, HST will provide or allow U.S. EPA or its authorized representative(s) to take split or duplicate samples of all samples collected by HST pursuant to this Agreement.

HST will retain, for at least six years after this Agreement terminates, all data, records, and final documents now in its possession or control or which come into its possession or control which relate to this Agreement or to waste management or disposal at the facility.

B. ROLES AND RESPONSIBILITIES

The Parties agree that HST will act in a self-directed and independent manner to complete corrective action at the facility and the tasks required by this Agreement. HST is responsible for completing the investigatory and, if necessary, stabilization and remediation activities identified in this Agreement. HST will perform the actions specified in this Agreement, in the manner and by the dates identified. HST will conduct all work identified in this Agreement in compliance with RCRA and other applicable federal and state laws and their implementing regulations; and consistent with relevant U.S. EPA guidance documents, as appropriate to the facility. Except as otherwise identified here, HST may conduct the work outlined in this Agreement without prior approval of U.S. EPA.

Attachment 6 is a summary of certain program milestones necessary to complete stabilization and corrective action activities at the facility. The Parties recognize that HST's ability and willingness to complete corrective action are dependent on U.S. EPA's timely review, comment and, as appropriate, approval of the following:

1. Achievement of Environmental Indicators (EI) demonstration.

2. Establishment of facility-specific target levels for investigation.

3. Establishment of corrective measures objectives, facility-specific media cleanup levels and termination criteria.

4. Corrective Measures Study recommendations and selection of final corrective measures.

5. Corrective Measures Completion Reports.

U.S. EPA will provide HST with timely review, comment and, as appropriate, approval of HST's submissions pertaining to the previously mentioned studies and reports. At the appropriate time, U.S. EPA will issue a Statement of Basis which selects its preferred corrective measures for the facility. Finally, after HST has satisfactorily completed corrective action and submitted the required documentation U.S. EPA will provide for timely termination of this agreement and issuance of a 'No Further Action' letter.

The Parties agree to meet, at least, on a semi-annual basis to discuss the work proposed and performed under this Agreement. The Parties agree to communicate frequently and in good faith so that HST can successfully complete the work identified in this Agreement according to the time frames specified within this Agreement.

U.S. EPA and HST will each designate a Project Manager and will notify each other of the Project Manager it has selected within 30 days of signing of this Agreement. Each Project Manager will be responsible for overseeing the implementation of his or her respective work required to implement this Agreement. The Project Managers may agree in writing to revise any deadline in this Agreement.

The Parties may change their Project Managers, with prior notice.

C. Stabilization Measures

By no later than March 31, 2002, HST will control a) current human exposures to contamination and b) migration of contaminated groundwater, according to U.S. EPA's guidance for documentation of EI determination, to levels below facility-specific target levels. By no later than February 28, 2002, HST will submit to U.S. EPA a draft report which documents its efforts to meet the requirements of this paragraph. The parties will refer to this

draft report as the draft Environmental Indicators (EI) Report. The draft EI Report shall contain completed draft EI Forms *(see Attachment 4)*, all documentation HST relied upon to complete the EI Forms and such other information as is necessary for U.S. EPA to determine that HST has met the requirements of this paragraph.

To meet the requirements of this subsection HST will:

a. Perform phased investigation(s) to identify the nature and extent of releases of hazardous waste and/or hazardous constituents from SWMUs and areas of concern (AOCs) at the facility, which may pose an unacceptable risk (i.e. above facility-specific target levels) to human health or the environment, and provide an investigation report(s) to U.S. EPA as it is developed. ~~Attachment 1 describes the schedule and sequence (phasing) of the RCRA Facility Investigation activities at the facility.~~

b. Perform activities necessary to determine current unacceptable risks to human health and the environment, with respect to facility-specific target levels.

c. Propose the remedy-specific cleanup objectives, termination criteria, and point(s) of compliance for the facility, providing the basis and justification for these decisions. HST will propose remedy-specific cleanup objectives and U.S. EPA will review and, as appropriate, approve of the objectives prior to HST's implementation of any stabilization measure.

d. Implement stabilization measures necessary to control current human exposures to contamination to within acceptable risk levels, and control the migration of contaminated groundwater.

HST shall establish a publicly accessible repository for information regarding facility activities and will conduct public outreach and involvement activities according to U.S. EPA's RCRA public participation guidance.

D. Final Corrective Measures

HST agrees to demonstrate that it has investigated all unacceptable risks to human health and the environment above facility-specific target levels and it has remediated all unacceptable risk to human health and the environment above facility-specific cleanup levels.

HST will propose to U.S. EPA by September 30, 2002, final corrective measure(s) for the facility. HST will enter into timely good faith negotiations for an enforceable agreement for implementation of any long-term institutional controls that it may propose. HST will include in its proposal the data, factors and technologies that are necessary for U.S. EPA to make the final corrective measure selection, including, but not limited to, a demonstration that there are no unacceptable risks to human health or the environment above facility-specific target levels from hazardous waste or hazardous constituents at or from the facility under current or reasonably expected future land use or that these risks are adequately addressed. HST will include in its report ~~proposal a description of all of the corrective measures alternatives that it considered and~~ the justification for its proposed alternative. HST will provide the specifics for any long-term institutional controls it may propose as part of the final remedy. U.S. EPA may request supplemental information from HST if U.S. EPA determines that the proposal and supporting information do not provide an adequate basis for selection of final corrective measure(s). HST will provide to U.S. EPA the supplemental information within 90 days after receiving a request from U.S. EPA, assuming additional investigation is not necessary to obtain the information. If additional investigation is necessary, then HST will submit within 60 days a schedule to complete the additional investigation.

HST will provide the public with periodic information regarding facility activities through public outreach and involvement activities according to U.S. EPA's RCRA public participation guidance. U.S. EPA will provide the public with an opportunity to review and comment on the proposed final corrective measure alternative(s) it selects, including U.S. EPA's justification for proposing such final corrective measure(s) (the "Statement of Basis"). Following the public comment period, U.S. EPA will select the final corrective measure(s) for the Facility.

If HST agrees with U.S. EPA's final corrective measure(s) then HST will implement U.S. EPA's selected corrective measure within 90 days of U.S. EPA's selection. HST will provide U.S. EPA with a schedule for its implementation within the same 90 day period. HST will provide a final completion report documenting all work performed as scheduled in U.S. EPA's approval of the selected final corrective measure. HST will provide this report within 90 days after completing all construction activities.

E. Progress Reports and Attachments

HST will provide program quarterly progress reports to the U.S.

EPA. These progress reports will summarize the work performed during the reporting period, data collected, problems encountered, and percent project completed by the 15th day of each month following a quarter. Progress reports following the 90 days after construction completion of any stabilization measure(s), will include summaries of stabilization measure activities documenting work performed, justification of stabilization decisions made, including sampling documentation, risk assessment documentation, construction completion documentation and confirmatory sampling results.

The following documents are part of this Agreement and are incorporated by reference into this Agreement:

a. Attachment 1 - Schedule and sequence (phasing) of RCRA Facility Investigation.

b. Attachment 2 - Screening Process Diagrams

   1. Attachment 2.A - Selection of Screening Levels for Chemicals in Groundwater (Perimeter/Offsite)

   2. Attachment 2.B - Data Screening Process - Perimeter Investigation

   3. Attachment 2.C - Selection of Screening Levels for Chemicals in Groundwater - Onsite Controlled Access Areas

c. Attachment 3 - Program Sequence Diagram

d. Attachment 4 - February 5, 1999, Interim Final Guidance for Documentation of Environmental Indicator Determinations.

e. Attachment 5 - HST Program Milestones with Requested Responses from U.S. EPA.

IV. MODIFICATION, TERMINATION AND SATISFACTION.

The express terms of this Agreement may be modified only by mutual agreement of U.S. EPA and HST. Any agreed modification will be in writing, be signed by both parties, be effective on the date of signature by both parties, and be incorporated into this Agreement. The Project Managers may agree to and incorporate modifications pertaining to the implementation of this Agreement by written signature.

Either Party may unilaterally terminate this Agreement upon written notice to the other party. U.S. EPA's participation in this Agreement is subject to the Anti-Deficiency Act, 31 U.S.C Section 1341.

HST will conduct a monitoring program to measure the effectiveness of the final corrective measure. HST will continue to operate and maintain all necessary elements of the final corrective measure(s) until documentation shows that HST has achieved final corrective action remedy-specific cleanup objectives and has met performance measures and termination criteria. At that time HST may request in writing that U.S. EPA terminate this Agreement. HST will be responsible for preparing a request for Corrective Measure Completion and Termination.

U.S. EPA may decide that HST has completed the corrective measures for the entire facility, for a portion of the facility, or for a specified area, media, unit or release. U.S. EPA may terminate this Agreement when it has determined that HST has met the corrective action cleanup objectives for the facility. HST will submit documentation that it has achieved the objectives and U.S. EPA will respond in writing indicating whether HST has completed RCRA corrective action. If U.S. EPA agrees that RCRA corrective action is complete it will issue a 'No Further Action' letter.

V. RESERVATION OF RIGHTS

The Parties reserve any and all rights, remedies, authorities or defenses that they respectively have under law. Nothing in this Agreement limits or affects the authority or ability of either Party to take any action authorized by law. Nothing in this Agreement creates any legal rights, claims or defenses in either Party or by or for any third party. Nothing in this Agreement relieves HST from complying with applicable federal, state and local laws. Both Parties agree that they may not use this Agreement or the existence of this Agreement in any administrative or judicial proceeding.

HST is solely responsible for the proper performance of work contemplated by this Agreement. U.S. EPA's approval of any documents or work does not constitute final agency action nor is it a warranty or representation that the required cleanup performance standards will be met or that HST has obtained the required permits and approvals.

This Agreement does not limit or affect the rights of the Parties against any Third Party, nor does it limit the rights of Third

Parties. The Parties agree that this Agreement does not constitute any decision on preauthorization of funds under §111(a)(2) of CERCLA.

VI. EFFECTIVE DATE

This Agreement is effective upon signature of both HST and U.S. EPA. The effective date will be the date upon which the last Party signs.

DATE:_____ By:_____
Henkel Surface Technologies

DATE:_____ By:_____
Mr. Robert Springer, Director
Waste Pesticides & Toxics Division
U.S. EPA REGION 5

Attachment 1

Schedule of RCRA Facility Investigation.

Corrective Action Activity	Due date
RFI Workplan	Within 90 calendar days from the signature date of the Voluntary corrective action agreement.
RFI Implementation	Within 45 calendar days after submittal of the RFI Workplan
RFI Report	Within 60 calendar days after completion of RFI activities.
Draft EI Compliance Report	1 year after completion of RFI activities.
Final EI Compliance Report	45 calendar days after submittal of Draft EI Compliance Report.

Attachment 2

Selection of Screening Levels for Chemicals in Groundwater - Onsite Controlled Access Areas

Michigan Department of Environmental Quality Groundwater : residential and Industrial - Commercial Part 201 Generic Cleanup Criteria and Screening Levels.

Attachment 3

February 5, 1999, Interim Final Guidance for Documentation of Environmental Indicator Determinations

HENKEL SURFACE TECHNOLOGIES
Regulatory Affairs and
Product Acceptance (RAPA)

June 29, 2000

Mr. Tom Manning
Corrective Action Project Manager
Corrective Action Section
USEPA - Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Dear Tom:

As per our telephone conversation earlier today, enclosed please find a **revised** draft copy of the Voluntary Corrective Action Agreement that you requested of Henkel Surface Technologies (HST).

I will be in the office all day Wednesday, July 5, 2000, should you wish to discuss any of the revisions.

Thank you for your direction and guidance in helping HST to resolve this matter with the USEPA.

Very truly yours,

Jack Garavanta

Enclosure

From... **Jack Garavanta**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

May 2, 2000

REPLY TO THE ATTENTION OF:

CERTIFIED MAIL: Z 411 903 707 DW-8J
RETURN RECEIPT REQUESTED

Mr. Jack Garavanta
Henkel Corporation
32100 Stephenson Highway
Madison Heights, MI 48071

Re: Voluntary Agreement (VA) for RCRA Corrective Action
Henkel Corporation, 322 W. Main St., Morenci, MI.
MID 058 723 867

Dear Mr. Garavanta:

The United States Environmental Protection Agency (U S. EPA) is providing you with a draft Voluntary Corrective Action Agreement notice. This draft notice is in response to my visit on October 19,1999 and the U S. EPA mandate for achieving the Environmental Indicators for Henkel based on its Hi-Priority classification. The Voluntary Corrective Action Agreement calls for a streamlined Corrective Action process for Henkel.

As a result of my visit, U.S. EPA is satisfied that current human exposures at the Henkel site are under control. U.S. EPA is primarily concerned with controlling the migration of contaminated groundwater. According to Michigan Department of Environmental Quality personnel, groundwater remains a minor concern due to the presence of 4 volatiles at monitoring well MW-3.

To this end, I have enclosed a copy of the draft Voluntary Corrective Action agreement that would be used to guide this effort. This agreement outlines our roles and responsibilities in the Corrective Action process and requires that Henkel submit a report to the U.S. EPA by January 31, 2001, that would document how the Environmental Indicator for control of migration of contaminated groundwater could be achieved. The agreement also requires that a final remedy will be proposed to the U.S. EPA no later than July 31, 2001. This agreement which will be finalized after a joint meeting between Henkel and the U.S. EPA must be in place within 45 days of the receipt of this letter. If for any reason a Voluntary Agreement cannot be reached between the two parties, the site will be referred to our enforcement and Compliance Branch to initiate a RCRA 3008(h) order.

Please contact me as soon as you review the enclosed materials to arrange a meeting between us at the EPA offices. The purpose of the meeting would to finalize the agreement after making any appropriate changes where necessary and to discuss any clarification on the attachments. To assist you in understanding the Voluntary corrective action process and the terminologies /interpretations, I have included a set of attachments for your use.

If you have any questions concerning this subject, please contact me at (312) 886-6943.

Sincerely,

Thomas Manning

Thomas Manning.
Corrective Action Project Manager
Waste Management Branch, Waste, Pesticides & Toxics Division.
Corrective Action Section

Enclosures: Draft Voluntary Corrective Action Agreement Interim Final Guidance for Documentation of Environmental Indicator Determinations

Draft Voluntary Corrective Action Agreement between The United States Environmental Protection Agency and Henkel Corporation

I. Purpose

The United States Environmental Protection Agency (USEPA) and the Henkel ~~Co.~~ Corp collectively referred to as the Parties, establish this agreement for Henkel to work independently and voluntarily to investigate, ~~and as necessary stabilize and remediate releases of hazardous wastes or hazardous constituents at or from~~ the facility located at 322 West Main Street, Morenci, MI, presently owned by Henkel. The Parties believe that Henkel will appropriately, efficiently and effectively investigate and, as necessary, remediate the facility on an accelerated basis by following the procedures and guidelines in this Agreement. This Agreement will have fulfilled its purpose and will terminate upon written acknowledgment by USEPA that Henkel has completed its corrective action obligations under RCRA at the facility.

II. Background

The Henkel facility has been shut down since 1990. Since then the buildings and equipment have been removed and an empty lot is all that exists at the site. Efforts were initiated by the owner to obtain a RCRA Closure Approval from the State of Michigan for the regulated units. ~~Based on the results of the sampling done as part of closure requirements the soil had been impacted by VOCs~~. Source Hotspots have been removed to the satisfaction of U.S. EPA. Further, U.S. EPA has determined that human exposure to risk at the site is under control. Groundwater has also been impacted at the site. Groundwater sampling results from 1998 indicate that VOCs are present in groundwater at levels slightly above the Michigan Part 201 Drinking Water Criteria.

USEPA and Henkel expect that Henkel will investigate, and as necessary remediate, all releases of hazardous wastes or constituents at or from the facility under the guidelines established in this Voluntary Corrective Action Agreement (Agreement).

Henkel will prepare the following documents in preparation of corrective action activities at the facility:

a. Voluntary RCRA Facility Investigation (RFI) [Workplan for Additional Groundwater Sampling] to include Site History; Summary of Previous Investigations; and Quality Control Measures.

~~a. RCRA Facility Investigation (RFI).~~

~~b) Groundwater Migration Pathways.~~

b. Summary Report and Corrective Action Plan

III. GENERAL PROVISIONS, ROLES & RESPONSIBILITIES, ~~STABILIZATION ACTIVITIES~~, FINAL CORRECTIVE MEASURES AND REPORTS

A. General Provisions

This Agreement incorporates the definitions in RCRA or in regulations promulgated or guidance developed under RCRA, unless otherwise specified.

Henkel will use appropriate risk considerations to determine and propose facility-specific target levels and final clean-up levels for USEPA's review and approval. Target levels (also referred to as risk-based screening levels) are initial chemical concentration levels which U. S. EPA and Henkel will use to guide decisions on selecting chemicals of concern and conducting further investigation on contaminated environmental media at the site. Clean-up levels will include risk-based goals and may also be influenced by additional factors such as remedial technology limits, analytical detection limits, and cost factors.

Henkel's risk assessments will estimate risk under reasonable maximum exposure for both current and reasonable expected future use scenarios. ~~Henkel will conduct risk assessments according to the Risk Assessment Guidance for Superfund (RAGS)~~. Henkel will use appropriate conservative screening values when screening to determine whether further investigation or action is required. ~~Appropriate conservative screening values include but are not limited to those derived from Federal Maximum Contaminant Levels, "USEPA's Soil Screening Guidance: User's Guide", USEPA Region 9 Preliminary Remediation Goals, ASTM RBCA (PS 104-98) methods, USEPA Region 5 Ecological Screening Levels (formerly known as EDQLs), USEPA Region 5 Risk-Based Screening Levels, USEPA Region 3 Risk Based Concentration Table, and RAGS~~.

consistent with Part 201 of the Michigan Natural Resources and Environmental Protection Act (NREPA: P.A. 451 of 1994, as amended).

~~If facility-specific target levels are exceeded, Henkel will undertake prompt action to ensure protection of human health and the environment~~.

Henkel will collect groundwater samples consistent with Part 201 of NREPA ~~all samples according to the Region 5 RCRA Quality Assurance Project Plan (QAPP) Policy (April 1998) as appropriate for the facility. Further, these samples will be sufficient to: 1) identify releases, consistent with the objectives of this Agreement, 2) identify the extent of the releases, characterize such releases, and characterize release~~

for the purpose of determining

~~source areas to the extent necessary to assess~~ the ~~risk~~ to human ~~health and the environment, and 3) determine~~ the need for ~~and design of~~ any ~~stabilization and~~ final corrective measures. USEPA may, at its discretion, audit laboratories selected by Henkel. ~~Henkel will purchase and analyze any Performance Evaluation (PE) samples that USEPA selects for Constituents of Concern~~.

To the extent possible, Henkel will notify USEPA in writing ~~at least 15 working days prior to beginning each separate phase of field work performed under this Agreement and~~ at least five (5) working days prior to collecting samples. At the request of USEPA, Henkel will provide or allow USEPA or its authorized representative(s) to take split or duplicate samples of all samples collected by Henkel pursuant to this Agreement.

Henkel will retain, for at least six years after this Agreement terminates, all data, records, and final documents now in its possession or control or which come into its possession or control which relate to this Agreement or to waste management or disposal at the facility.

B. ROLES AND RESPONSIBILITIES

The Parties agree that Henkel will act in a self-directed and independent manner to complete corrective action at the facility and the tasks required by this Agreement. Henkel is responsible for completing the investigatory ~~and necessary stabilization~~ and remediation activities identified in this Agreement. Henkel will perform the actions specified in this Agreement, in the manner and by the dates identified. Henkel will conduct all work identified in this Agreement in compliance with RCRA and other applicable federal and state laws and their implementing regulations; and consistent with relevant USEPA guidance documents, as appropriate to the facility. Except as otherwise identified here(in) Henkel may conduct the work outlined in this Agreement without prior approval of USEPA.

~~*Attachment (identify number) is a summary of certain program milestones necessary to complete stabilization and corrective action activities at the facility*~~. ~~The Parties recognize that Henkel's ability and willingness to complete corrective action are dependent on USEPA's timely review, comment and, as appropriate, approval of the following:~~

~~1. Achievement of Environmental Indicators (EI) demonstration.~~

~~2. Establishment of facility-specific target levels for investigation.~~

~~3. Establishment of corrective measures objectives, facility specific media cleanup levels and termination criteria.~~

~~4. Corrective Measures Study recommendations and selection of final corrective measures.~~

~~5. Corrective Measures Completion Reports.~~

USEPA will provide Henkel with timely review, comment and, as appropriate, approval of Henkel's submissions pertaining to the ~~above identified demonstrations~~, studies ~~or~~ and reports. At the appropriate time, USEPA will issue a Statement of Basis which selects its preferred corrective measures for the facility. Finally, after Henkel has satisfactorily completed corrective action and submitted the required documentation USEPA will provide for timely termination of this agreement and issuance of a `No Further Action' letter. previously mentioned

~~The Parties agree to meet, at least, on a semi-annual basis to discuss the work proposed and performed under this Agreement.~~ The Parties agree to communicate frequently and in good faith so that Henkel can successfully complete the work identified in this Agreement ~~according to the time frames specified within this Agreement~~. in a timely manner.

USEPA and Henkel will each designate a Project Manager and will notify each other of the Project Manager it has selected within 30 days of signing of this Agreement. Each Project Manager will be responsible for overseeing the implementation of his or her respective work required to implement this Agreement. The Project Managers may agree in writing to revise any deadline in this Agreement. The Parties may change their Project Managers, with prior notice.

~~C. Stabilization Measures~~

By no later than January 31, 2001 Henkel will control a) current human exposures to contamination and b) migration of contaminated groundwater, according to USEPA's guidance for documentation of EI determination, to levels below facility-specific target levels. (See Attachment 2 dated "February 5, 1999, (Interim Final Guidance on Documentation of Environmental Indicators Determinations"). By no later than December 15, 2000 Henkel will submit to USEPA a draft report which documents its efforts to meet the requirements of this paragraph. The parties will refer to this draft report as the draft Environmental Indicators (EI) Report. The draft EI Report shall contain completed draft EI Forms *(See Attachment (identify number)*, all documentation Henkel relied upon to complete the EI Forms and such other information as is necessary for USEPA to determine that Henkel has met the

~~requirements of this paragraph~~.

~~To meet the requirements of this subsection Henkel will~~:

a. Perform phased investigation(s) to identify the nature and extent of releases of hazardous waste and/or hazardous constituents from SWMUs and areas of concern (AOCs) at the facility, which may pose an unacceptable risk (i.e. above facility-specific target levels) to human health or the environment, and provide an investigation report(s) to USEPA as it is developed. *Attachment (identify number)* describes the schedule and sequence (phasing) of the RCRA Facility Investigation activities at the facility.

b. Perform activities necessary to determine current unacceptable risks to human health and the environment, with respect to facility-specific target levels.

c. Propose the remedy-specific cleanup objectives, termination criteria, and point(s) of compliance for the facility, providing the basis and justification for these decisions. Henkel will propose remedy-specific cleanup objectives and USEPA will review and, as appropriate, approve of the objectives prior to Henkel's implementation of any stabilization measure.

d. Implement stabilization measures necessary to control current human exposures to contamination to within acceptable risk levels, and control the migration of contaminated groundwater.

Henkel shall establish a publicly accessible repository for information regarding facility activities and will conduct public outreach and involvement activities according to USEPA's RCRA public participation guidance.

C. ~~D.~~ **Final Corrective Measures**

and addressed

Henkel agrees to demonstrate that it has investigated all unacceptable risks to human health and the environment ~~above facility-specific target levels and it has remediated all unacceptable risk to human health and the environment above facility-specific cleanup levels~~.

consistent with cleanup criteria established in Part 201 of NREPA.

Henkel will propose to USEPA by July 31, 2001, final corrective measure(s) for the facility. Henkel will enter into timely good faith negotiations for an enforceable agreement for implementation of any long-term institutional controls that it may propose. Henkel will include in its proposal the data, factors and technologies that are necessary for USEPA to make the final

corrective measure selection, ~~including, but not limited to, a demonstration that there are no unacceptable risks to human health or the environment above facility specific target levels from hazardous waste or hazardous constituents at or from the facility under current or reasonably expected future land use or that these risks are adequately addressed.~~ Henkel will include in its ~~proposal~~ report ~~a description of all of the corrective measures alternatives that it considered and~~ the justification for its proposed alternative. Henkel will provide the specifics for any long-term institutional controls it may propose as part of the final remedy. USEPA may request supplemental information from Henkel if USEPA determines that the proposal and supporting information do not provide an adequate basis for selection of final corrective measure(s). Henkel will provide to USEPA the supplemental information within 90 days after receiving a request from USEPA, assuming additional investigation is not necessary to obtain the information. If additional investigation is necessary, then Henkel will submit within 60 days a schedule to complete the additional investigation.

~~Henkel will provide the public with periodic information regarding facility activities through public outreach and involvement activities according to USEPA's RCRA public participation guidance.~~ USEPA will provide the public with an opportunity to review and comment on the proposed final corrective measure alternative(s) it selects, including USEPA's justification for proposing such final corrective measure(s) (the "Statement of Basis"). Following the public comment period, USEPA will select the final corrective measure(s) for the Facility.

If Henkel agrees with USEPA's final corrective measure(s) then Henkel will implement USEPA's selected corrective measure within 90 days of USEPA's selection. Henkel will provide USEPA with a schedule for its implementation within the same 90 day period. Henkel will provide a final completion report documenting all work performed as scheduled in USEPA's approval of the selected final corrective measure. Henkel will provide this report within 90 days after completing all construction activities.

D. ~~E.~~ Progress Reports ~~and Attachments~~

Henkel will provide program quarterly progress reports to the USEPA. These progress reports will summarize the work performed during the reporting period, data collected, problems encountered, and percent project completed by the 15th day of each month following a quarter. ~~Progress reports following the 90 days after construction completion of any stabilization measure(s), will include summaries of stabilization measure activities documenting work performed, justification of stabilization decisions made, including sampling documentation, risk assessment documentation, construction completion documentation and/or confirmatory sampling results.~~

The following documents are part of this Agreement and are incorporated by reference into this Agreement:

a. *Attachment ?? - Schedule and sequence (phasing) of RCRA Facility Investigation.*

b. *Attachment ?? - Screening Process Diagrams*

   1. *Attachment ??.a - Selection of Screening Levels for Chemicals in Soil - Perimeter/Offsite*

   2. *Attachment ??.b - Selection of Screening Levels for Chemicals in Groundwater - Perimeter/Offsite*

   3. *Attachment ??.c - Data Screening Process - Perimeter Investigation*

   4. *Attachment ??.d - Selection of Screening Levels for Chemicals in Soil - Onsite Controlled Access Areas*

   5. *Attachment ??.e - Selection of Screening Levels for Chemicals in Groundwater - Onsite Controlled Access Areas*

c. *Attachment ?? - Program Sequence Diagram*

d. *Attachment ?? - Program Schedule*

e. *Attachment ?? - Data Management Plan*

f. *Attachment ?? - Process Diagram for Selection of Cleanup Levels*

g. *Attachment ?? - February 5, 1999, Interim Final*

HENKEL CORPORATION, PARKER AND AMCHEN (MID 058 723 867)

Henkel Corporation, Parker and Amchen, formerly Parker Surface Treatment Products, produces metal-treating chemicals. The facility is located in Morenci, Michigan, and has been in operation since 1928. Extensive site contamination has been documented, probably as the result of improperly stored drums. These drums were removed in 1982. The facility is presently permitted to store 15,000 gallons in containers (S01) of D001, D002, D003, and D007 listed wastes. Henkel has submitted a closure plan for their container storage area.

The groundwater route was scored based on limited data indicating the presence of heavy metals such as lead, zinc, and cyanide in the aquifer of concern. The metals were contained in improperly stored, leaking drums. The groundwater is the drinking water source and wells are located 50 yards from the site.

Henkel does not maintain an NPDES permit. Heavy metals and PCBs were detected in Bean Creek, which runs along the site boundary. The contamination detected in the creek was probably the result of reported leaking barrels. The use of Bean Creek for recreation is assumed. The distance to a sensitive environment is greater than 2 miles from the site.

No observed release was scored for the air route. The facility does have an air operating permit. However, no permit violations have been documented. Drums located outdoors did not have covers and because baghouse dust fiber packs were strewn across the property. Several organics are stored in these drums. Residences are located within 1/4 mile of the facility.

On-site contamination from PCB and heavy metals was observed. The access to this site is unrestricted.

References:

Parker Chemical Co. 1988. Revised Closure Plan. May 12.

MDNR. 1985. CERCLA PA of Parker Surface Treatment Products, Morenci, Michigan.

EPA. 1990. RCRA Part A Permit and Compliance Files.

PRC. 1994. "NCAPS Information Request - Michigan." Received by Facsimile from MDNR on February 14.

RCRA PRIORITIZATION SYSTEM SCORING SUMMARY

FOR

HENKEL CORP. PARKER AND AMCHEN

EPA SITE NUMBER: MID 058723867

MORENCI, MI

SCORED BY: DONNA STROKA/ NICK NIGRO

OF PRC EMI

ON 03/18/94

GROUNDWATER SCORE	:	88.46
SURFACE WATER SCORE:		60.23
AIR ROUTE SCORE	:	20.66
ONSITE SCORE	:	85.71

MIGRATION SCORE	:	69.33

WS-1 GROUNDWATER ROUTE

IS THERE AN OBSERVED RELEASE? Y

ROUTE CHARACTERISTICS

DEPTH TO AQUIFER (FT.) : NA

NET PRECIPITATION (IN.) : NA

PHYSICAL STATE: NA

CONTAINMENT:

WASTE CHARACTERISTICS

CHEMICAL NAME OR WASTE CODE NUMBER: LEAD

TOXICITY/PERSISTANCE VALUE: 18

QUANTITY KNOWN? YES

CUBIC YARDS OR TONS: 0
DRUMS : 2163

TARGETS

GROUNDWATER USE: DRINKING WATER

DISTANCE TO WELL (MILES): 0.4

WS-2 SURFACE WATER ROUTE

RELEASES

IS THERE AN OBSERVED RELEASE? Y

IS THERE A PERMITTED OUTFALL?

HAVE THERE BEEN PERMIT VIOLATIONS?

ROUTE CHARACTERISTICS

FACILITY LOCATION: NA

24-HOUR RAINFALL: NA

DISTANCE TO SURFACE WATER (MILES): NA

PHYSICAL STATE: NA

CONTAINMENT: NA

WASTE CHARACTERISTICS

CHEMICAL NAME OR WASTE CODE NUMBER: CHROMIUM

TOXICITY/PERSISTANCE VALUE: 18

QUANTITY KNOWN? YES

CUBIC YARDS OR TONS:	0
DRUMS :	2163

TARGETS

SURFACE WATER USE: POSSIBLE DRINKING WATER OR RECREATION

DISTANCE TO INTAKE OR CONTACT POINT (MILES): 0.4

DISTANCE TO SENSITIVE ENVIRONMENT (MILES): 3.0

EPA ID NO. : MID 058723867
HENKEL CORP. PARKER AND AMCHEN

WS-3 AIR ROUTE

RELEASES

IS THERE AN OBSERVED, UNPERMITTED, ON-GOING RELEASE? N

DOES THE FACILITY HAVE AN AIR OPERATING PERMIT(S)? Y

HAVE THERE BEEN ANY PERMIT VIOLATIONS OR ODOR COMPLAINTS BY RESIDENTS? N

CAN CONTAMINANTS MIGRATE INTO AIR? Y

CONTAINMENT: POOR

WASTE CHARACTERISTICS

CHEMICAL NAME OR WASTE CODE NUMBER: CHROMIUM

TOXICITY/PERSISTANCE VALUE: 3

QUANTITY KNOWN? YES

CUBIC YARDS OR TONS: 0
DRUMS : 2163

TARGETS

POPULATION: RESIDENCES ARE LOCATED WITHIN FOUR MILES

DISTANCE TO SENSITIVE ENVIRONMENT (MILES): 3.0

EPA ID NO. : MID 058723867
HENKEL CORP. PARKER AND AMCHEN

WS-4 ON SITE CONTAMINATION

ACCESS TO SITE: UNLIMITED ACCESS

IS THERE AN OBSERVED SURFACE SOIL CONTAMINATION? Y

CONTAINMENT: POOR

WASTE CHARACTERISTICS

CHEMICAL NAME OR WASTE CODE NUMBER: CHROMIUM, PCBS & HEAVY METALS

TOXICITY/PERSISTANCE VALUE: 3

TARGETS

DISTANCE TO RESIDENTIAL AREAS (MILES): 0.20

IS THERE AN ON-SITE SENSITIVE ENVIRONMENT: N

OCT 15 1999

DW-8J

CERTIFIED MAIL: Z 411 857 477
RETURN RECEIPT REQUESTED

Mr. Jack Garabanta
Henkel Corporation
322 West Main St.
Morenci, MI 49256

RE: RCRA Corrective Action Evaluations in Response to Government Performance and Results Act
(Henkel Corporation), Morenci, MI MID 058 723 867

Dear Mr. Garabanta:

Your facility is subject to either Sections 3004(u) or 3008(h) of the Resource Conservation and Recovery Act (RCRA). Corrective action may be required at your facility to address releases of hazardous wastes and/or constituents from solid waste management units (SWMUs). This letter is to inform you that the Henkel Corporation facility in Morenci, MI, has been scheduled for evaluation during the month of October by representatives from the United States Environmental Protection Agency (U.S. EPA), Region 5.

This effort is being initiated in order to ensure that your facility does not pose an environmental hazard to human health or the environment. Your facility has been included as a part of Region 5's Government Performance and Results Act (GPRA) Baseline of RCRA corrective action facilities. The Baseline list is made up of those facilities which are the highest corrective action priorities. Your facility will be evaluated in order to establish an accurate understanding of its environmental status. That status information will serve as a part of our determination of the next steps we must take.

Because Henkel Corporation is a GPRA Baseline facility for which RCRA corrective action has not been initiated, the U.S. EPA, Region 5 will conduct an evaluation of U.S. EPA and State RCRA files and will perform a visual site inspection of your facility. The site inspection of your facility is being scheduled for the month of October. Mr. Thomas Manning of will be contacting you in order to schedule this site visit. Your cooperation and assistance will enable our representative to establish the best possible understanding of the environmental condition of your facility.

Please contact me or Mr. Thomas Manning at (312) 886-6943 if you have questions.

Sincerely,

Hak K. Cho
Chief, Corrective Action Section
Waste, Pesticides and Toxics Division

cc: State Corrective Action Section File
P. Quackenbush, MDEQ

10-15-99

10-15-99

10/15/99

Dragun Corporation

30415 Northwestern Hwy. • Suite 260 • Farmington Hills, MI, USA 48334 • 248-932-0228 • FAX 248-932-0618

LETTER OF TRANSMITTAL

DATE: 5-11-00

SUBJECT: MDEQ Cleanup Criteria re: Henkel Property, Morenci, MI.

TO: Thomas Manning, Corrective Action Project Manager
US Environmental Protection Agency, Region 5
77 West Jackson Blvd. Mail Code DW-8J
Chicago, IL 60604-3590

We are sending you:

(✓) Attached or ( ) Under separate cover via _____

the following items:

( ) Draft report	( ) Final report	( ) Figure
( ) Plans	( ) Prints	( ) Specifications
( ) Shop drawings	( ) Change order	(✓) Other _____

Number of Copies	Description
1	Current MDEQ Part 201 Cleanup Criteria Tables

These are transmitted as indicated below:

(X) For information	( ) Resubmit _____ copies for review
( ) For review & comment	( ) Return _____ corrected prints
( ) For approval	( ) Returned after loan to us
( ) As requested	( ) Submit _____ copies for distribution
( ) _____	

REMARKS: Tom, Per our conversation, these are the current cleanup criteria tables pursuant to Part 201 of P.A. 451 as utilized by the MDEQ during site evaluations. Call me if you need any further information.

If enclosures are not as noted, kindly notify us at once.

By: Jeffrey A Bolin

CC: Jack Giaravanta, HST w/o Attachment

Jeffrey A. Bolin

Part 201 Cleanup Criteria Changes for May 28, 1999

Chemical	CAS #	Criteria	Column Number
Acrylonitrile	107131	FESL	8
Ammonia	766441	GSI	3
		GSI PC	12
Boron	744042	GSI	3
		GSI PC	12
t-Butyl alcohol	75650	FESL	8
Butyl benzyl phthalate	85687	GSI	3
		GSI PC	12
Cadmium	744043	Res DCC	19
		Ind DCC	27
		Com III DCC	28
		Com IV DCC	29
Carbazole	86748	GSI	3
		GSI PC	12
Carbon disulfide	75150	FESL	8
Chlorobenzene	108907	FESL	8
Chloroethane	75003	FESL	8
Di-n-octyl phthalate	117840	GSI	3
		GSI PC	12
Diacetone alcohol	123422	FESL	8
Dibenzofuran	132649	GSI	3
		GSI PC	12

Chemical	CAS #	Criteria	Column Number
Dibromochloropropane	96128	Res GVIIC	4
		Ind/Com GVIIC	5
		GCC	6
		GCC PC	13
		Res SVIIC	14
		Res Infinite VSIC	15
		Res VSIC 5M	16
		Res VSIC 2M	17
		Res PSIC	18
		Csat	20
		Ind/Com SVIIC	22
		Ind/Com Infinite VSIC	23
		Ind/Com VSIC 5M	24
		Ind/Com VSIC 2M	25
		Ind/Com PSIC	26
		Ind DCC	27
		Com III DCC	28
		Com IV DCC	29
Dichlorodifluoromethane	75718	GSI	3
		GSI PC	12
1,1-Dichloroethane	75343	FESL	8
1,2-Dichloroethane	107062	FESL	8
1,3-Dichloropropene	542756	FESL	8
Diisopropylamine	108189	FESL	8
1,4-Dioxane	123911	FESL	8
Epichlorohydrin	106898	FESL	8
Ethanol	64175	Res DWC	1
		Ind/Com DWC	2
		FESL	8
		Res DW PC	11
		Ind/Com DW PC	21
Ethyl acetate	141786	FESL	8

Chemical	CAS #	Criteria	Column Number
Ethylene glycol monobutyl ether	111762	Res DWC	1
		Ind/Com DWC	2
		GCC	6
		Res DW PC	11
		GCC PC	13
		Res DCC	19
		Ind/Com DW PC	21
		Ind DCC	27
		Com III DCC	28
		Com IV DCC	29
Fluoranthene	206440	GSI	3
		GSI PC	12
Formic acid	64186	GSI	3
		GSI PC	12
Hexabromobenzene	87821	GSI	3
		GSI PC	12
Hexachlorocyclopentadiene (C-56)	77474	GSI	3
		GSI PC	12
n-Hexane	110543	FESL	8
Isophorone	78591	GSI	3
		GSI PC	12
Isopropyl benzene	98828	FESL	8
Manganese	743996	GSI	3
		GSI PC	12
Methyl-tert-butyl ether (MTBE)	163404	Res DWC	1
		Ind/Com DWC	2
		Res DW PC	11
		Ind/Com DW PC	21
Nitrobenzene	98953	GSI	3
		GSI PC	12
Polybrominated biphenyls	373242	GSI	3

Chemical	CAS #	Criteria	Column Number
Pyridine	110861	FESL	8
1,2,4,5-Tetrachlorobenzene	95943	GSI	3
		GSI PC	12
Tetrahydrofuran	109999	GSI	3
		GSI PC	12
1,2,4-Trimethylbenzene	95636	Res DWC	1
		Ind/Com DWC	2
		FESL	8
		Res DW PC	11
		Ind/Com DW PC	21
1,3,5-Trimethylbenzene	108678	Res DWC	1
		Ind/Com DWC	2
		Res DW PC	11
		Ind/Com DW PC	21

Res DWC	= Residential Drinking Water Criteria
Ind/Com DWC	= Industrial/Commercial Drinking Water Criteria
GSI	= Groundwater Surface Water Interface Criteria
FESL	= Flammability and Explosivity Screening Level
Res DW PC	= Residential Drinking Water Protection Criteria for Soil
GSI PC	= Groundwater Surface Water Interface Protection Criteria for Soil
Res Infinite VSIC	= Residential Infinite Volatile Soil Inhalation Criteria
Res VSIC 5M	= Residential Volatile Soil Inhalation Criteria for 5 Meter Source Thickness
Res VSIC 2M	= Residential Volatile Soil Inhalation Criteria for 2 Meter Source Thickness
Res PSIC	= Residential Particulate Soil Inhalation Criteria
Res DCC	= Residential Soil Direct Contact Criteria
Csat	= Soil Saturation Concentration Screening Level
Ind/Com DW PC	= Industrial/Commercial Drinking Water Protection Criteria for Soil
Ind/Com Infinite VSIC	= Industrial/Commercial Infinite Volatile Soil Inhalation Criteria
Ind/Com VSIC 5M	= Industrial/Commercial Volatile Soil Inhalation Criteria for 5 Meter Source Thickness
Ind/Com VSIC 2M	= Industrial/Commercial Volatile Soil Inhalation Criteria for 2 Meter Source Thickness
Ind/Com PSIC	= Industrial/Commercial Particulate Soil Inhalation Criteria
Ind DCC	= Industrial Soil Direct Contact Criteria
Com III DCC	= Commercial III Soil Direct Contact Criteria
Com IV DCC	= Commercial IV Soil Direct Contact Criteria

ATTACHMENT A

GROUNDWATER: RESIDENTIAL AND INDUSTRIAL-COMMERCIAL

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

Developed under the authority of the

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED

Groundwater criteria were calculated using currently available toxicological and chemical-specific data. These criteria may change as new data become available. They are not necessarily final cleanup standards. Current criteria are available on the ERD Homepage at www.deq.state.mi.us/erd. Scientific notation is represented by E+ or E- a value, for example 2×10^6 is reported as 2.0E+6. Please refer to Operational Memorandum #6 for analytical methods and method detection limits. All values are expressed in units of parts per billion (ug/L). Changes made since the last revision of the tables (January 1999) are shaded.

		#1	#2	#3	#4	#5	#6	#7	#8	#9
Chemical	Chemical Abstract Service Number	Residential & Commercial I Drinking Water Criteria	Industrial & Commercial II, III & IV Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Residential & Commercial I Groundwater Volatilization to Indoor Air Inhalation Criteria	Industrial & Commercial II, III & IV Groundwater Volatilization to Indoor Air Inhalation Criteria	Groundwater Contact Criteria (AA)	Water Solubility	Flammability and Explosivity Screening Level	Acute Inhalation Screening Level
Acenaphthene	83329	1,300	3,800	19	4,200 (S)	4,200 (S)	4,200 (S)	4,240	ID	ID
Acenaphthylene	208968	26	75	ID	3,900 (S)	3,900 (S)	3,900 (S)	3,930	ID	ID
Acetaldehyde (I)	75070	950	2,700	NA	1.1E+6	2.3E+6	4.2E+7	1.0E+9	4.4E+6	2.6E+7
Acetic acid (I)	64197	18,000 (M)	18,000 (M)	18,000 (M)	NLV	NLV	1.8E+8	6.0E+9	4.8E+6	1.0E+9 (D)
Acetone (I)	67641	730	2,100	1,700	1.0E+9 (D)	1.0E+9 (D)	3.1E+7	1.0E+9	7.5E+6	1.0E+9 (D)
Acetonitrile (I)	75058	140	400	NA	1.4E+8	2.0E+8 (S)	5.7E+6	2.00E+8	1.0E+7	2.0E+8 (S)
Acrolein (I)	107028	120	330	NA	2,100	4,200	3.4E+6	2.10E+8	3.3E+6	3.4E+5
Acrylamide	79061	0.5 (M)	0.78	NA	NLV	NLV	8,700	2.20E+9	ID	ID
Acrylic acid (I)	79107	3,900	11,000	NA	1.2E+7	2.8E+7	7.4E+7	1.0E+9	1.0E+9 (D)	ID
Acrylonitrile (I)	107131	1.6	6.4	4.9 (X)	34,000	1.9E+5	8,100	7.50E+7	3.2E+6	ID
Alachlor	15972608	2.0 (A)	2.0 (A)	11 (X)	NLV	NLV	ID	1.83E+5	ID	ID
Aldicarb	116063	3.0 (A)	3.0 (A)	NA	NLV	NLV	1.2E+5	6.00E+6	ID	ID
Aldicarb sulfoxide	1646873	4.0 (A)	4.0 (A)	NA	NLV	NLV	3.2E+6	2.60E+7	ID	ID
Aldicarb sulfone	1646884	2.0 (A)	2.0 (A)	NA	NLV	NLV	2.6E+6	7.80E+6	ID	ID
Aldrin	309002	0.05	0.2	NA	180 (S)	180 (S)	0.12	180	ID	ID
Aluminum (B)	7429905	50 (V)	50 (V)	NA	NLV	NLV	7.0E+7	NA	ID	ID
Ammonia	7664417	ID (N)	ID (N)	(AC)	3.2E+6	7.2E+6	ID	5.30E+8	ID	3.5E+8
Aniline (I)	62533	150	610	IP	NLV	NLV	3.7E+5	3.60E+7	ID	ID
Anthracene	120127	43 (S)	43 (S)	ID	43 (S)	43 (S)	43 (S)	43.4	ID	ID
Antimony (B)	7440360	6.0 (A)	6.0 (A)	ID	NLV	NLV	75,000	NA	ID	ID
Arsenic (B)	7440382	50 (A)	50 (A)	150 (X)	NLV	NLV	4,700	NA	ID	ID
Asbestos (AB)	1332214	7.0E+6 f/mL	7.0E+6 f/mL	NA	NLV	NLV	ID	NA	ID	ID

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Atrazine	1912249	3.0 (A)	3.0 (A)	7.3 (X)	NLV	NLV	1,600	70,000	ID	ID
Azobenzene	103333	7.7	32	NA	6,400 (S)	6,400 (S)	410	6,400	ID	ID
Barium (B)	7440393	2,000 (A)	2,000 (A)	190	NLV	NLV	1.5E+7	NA	ID	ID
Benzene (I)	71432	5.0 (A)	5.0 (A)	200 (X)	5,600	36,000	9,400	1.75E+6	34,000	67,000
Benzidine	92875	0.3 (M)	0.3 (M)	ID	NLV	NLV	6.8	5.20E+5	ID	ID
Benzo(a)anthracene (Q)	56553	5.0 (M)	5.0 (M)	NA	NLV	NLV	5.0 (M)	9.4	ID	ID
Benzo(b)fluoranthene (Q)	205992	5.0 (M)	5.0 (M)	ID	ID	ID	5.0 (M)	1.5	ID	ID
Benzo(k)fluoranthene (Q)	207089	12	48	NA	NLV	NLV	21	0.8	ID	ID
Benzo(g,h,i)perylene	191242	26	75	NA	NLV	NLV	5.0 (M)	0.26	ID	ID
Benzo(a)pyrene (Q)	50328	5.0 (M)	5.0 (M)	ID	NLV	NLV	5.0 (M)	1.62	ID	ID
Benzoic acid	65850	32,000	92,000	NA	NLV	NLV	3.5E+6 (S)	3.50E+6	ID	ID
Benzyl alcohol	100516	10,000	29,000	NA	NLV	NLV	4.4E+7 (S)	4.40E+7	ID	ID
Benzyl chloride	100447	5.0	20	NA	12,000	77,000	2,000	4.90E+5	ID	ID
Beryllium (B)	7440417	4.0 (A)	4.0 (A)	(G)	NLV	NLV	1.1E+6	NA	ID	ID
bis(2 Chloroethoxy)ethane	112265	ID	ID	NA	NLV	NLV	ID	1.89E+7	ID	ID
bis(2 Chloroethyl)ether (I)	111444	5.0 (M)	5.0 (M)	NA	38,000	2.1E+5	2,100	1.72E+7	1.7E+7 (S)	1.7E+7 (S)
bis(2 Ethylhexyl)phthalate	117817	6.0 (A)	6.0 (A)	32	NLV	NLV	47	340	ID	340 (S)
Boron (B)	7440428	500 (F)	500 (F)	1,900	NLV	NLV	6.8E+7	NA	ID	ID
Bromobenzene (I)	108861	18	50	NA	1.8E+5	3.9E+5	9,900	4.13E+5	ID	ID
Bromodichloromethane	75274	100 (A,W)	100 (A,W)	ID	4,800	38,000	11,000	6.74E+6	ID	ID
Bromoform	75252	100 (A,W)	100 (A,W)	ID	4.8E+5	3.1E+6 (S)	1.0E+5	3.10E+6	ID	ID
Bromomethane	74839	10	29	35	4,000	9,000	65,000	1.45E+7	ID	ID
n Butanol (I)	71363	950	2,700	NA	NLV	NLV	8.2E+6	7.40E+7	2.4E+7	7.4E+7 (S)
2 Butanone (MEK) (I)	78933	13,000	38,000	2,200	2.4E+8 (S)	2.4E+8 (S)	2.4E+8 (S)	2.40E+8	ID	2.4E+8 (S)
n Butyl acetate (I)	123864	550	1,600	NA	6.7E+6 (S)	6.7E+6 (S)	1.6E+6	6.70E+6	1.2E+6	6.7E+6 (S)
t Butyl alcohol (I)	75650	3,900	11,000	NA	1.0E+9 (D)	1.0E+9 (D)	7.7E+7	1.0E+9	3.0E+7	ID
Butyl benzyl phthalate	85687	1,200	2,700 (S)	14 (X)	NLV	NLV	2,700 (S)	2,690	ID	ID
n Butylbenzene	104518	80	230	NA	ID	ID	ID	NA	ID	ID
sec Butylbenzene	135988	80	230	NA	ID	ID	ID	NA	ID	ID
tert Butylbenzene (I)	98066	80	230	NA	ID	ID	ID	NA	ID	ID
Cadmium (B)	7440439	5.0 (A)	5.0 (A)	(G,X)	NLV	NLV	2.1E+5	NA	ID	ID
Camphene (I)	79925	ID	ID	NA	ID	ID	ID	33,400	ID	ID

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Caprolactam	105602	5,800	17,000	NA	NLV	NLV	4.2E+8	5.25E+9	ID	1.0E+9 (D)
Carbaryl	63252	700	2,000	NA	ID	ID	1.3E+5 (S)	1.26E+5	ID	ID
Carbazole	86748	43	170	10 (M)	NLV	NLV	2,900	7,480	ID	ID
Carbofuran	1563662	40 (A)	40 (A)	NA	NLV	NLV	3.3E+5	7.00E+5	ID	ID
Carbon disulfide (I,R)	75150	800	2,300	ID	2.5E+5	5.5E+5	1.1E+6	1.19E+6	8,500	ID
Carbon tetrachloride	56235	5.0 (A)	5.0 (A)	45 (X)	370	2,400	1,600	7.93E+5	ID	96,000
Chlordane (J)	57749	2.0 (A)	2.0 (A)	IP	56 (S)	56 (S)	11	56	ID	ID
Chloride (B)	16887006	2.5E+5 (E)	2.5E+5 (E)	NA	NLV	NLV	ID	NA	ID	ID
Chlorobenzene (I)	108907	100 (A)	100 (A)	47	2.1E+5	4.7E+5 (S)	68,000	4.72E+5	79,000	ID
Chloroethane (I)	75003	220	910	ID	5.7E+6 (S)	5.7E+6 (S)	2.0E+5	5.74E+6	56,000	ID
2-Chloroethyl vinyl ether	110758	ID	ID	NA	ID	ID	ID	1.50E+7	ID	ID
Chloroform	67663	100 (A,W)	100 (A,W)	170 (X)	28,000	1.8E+5	96,000	7.92E+6	ID	ID
Chloromethane (I)	74873	66	270	ID	8,600	52,000	1.1E+5	6.34E+6	18,000	2.1E+5
4-Chloro-3-methylphenol	59507	150	420	NA	NLV	NLV	62,000	3.90E+6	ID	ID
beta-Chloronaphthalene	91587	1,600	5,200	NA	ID	ID	6,700 (S)	6,740	ID	ID
2-Chlorophenol	95578	45	130	22	ID	ID	82,000	2.20E+7	ID	ID
o-Chlorotoluene (I)	95498	150	420	NA	3.7E+5 (S)	3.7E+5 (S)	35,000	3.73E+5	ID	ID
Chlorpyrifos	2921882	22	63	NA	2.9	6.6	1,100 (S)	1,120	ID	ID
Chromium (III) (8,H)	16065831	100 (A)	100 (A)	(G,X)	NLV	NLV	3.2E+8	NA	ID	ID
Chromium (VI) (D,H)	18540299	100 (A)	100 (A)	11	NLV	NLV	1.0E+6	NA	ID	ID
Chrysene (O)	218019	120	480	ID	ID	ID	5.0 (M)	1.6	ID	ID
Cobalt (B)	7440484	50 (M)	100	100	NLV	NLV	1.1E+6	NA	ID	ID
Copper (B)	7440508	1,000 (E)	1,000 (E)	(G)	NLV	NLV	8.1E+6	NA	ID	ID
Cyanazine	21725462	10 (M)	10 (M)	56 (X)	NLV	NLV	1,700	1.70E+5	ID	ID
Cyanide (H)	57125	200 (A)	200 (A)	20 (M)	NLV	NLV	6.5E+5	NA	ID	ID
Cyclohexanone (I)	108941	33,000	94,000	NA	1,400	3,300	2.3E+7 (S)	2.30E+7	ID	ID
Dacthal	1861321	73	210	NA	NLV	NLV	500 (S)	500	ID	ID
Dalapon	75990	200 (A)	200 (A)	NA	NLV	NLV	1.2E+7	5.02E+8	ID	ID
4,4'-DDD	72548	3.5	14	NA	NLV	NLV	12	90	ID	ID
4,4'-DDE	72559	2.5	10	NA	ID	ID	11	120	ID	ID
4,4'-DDT	50293	2.5	10	0.02 (M)	NLV	NLV	5.3	25	ID	ID
Decabromodiphenyl ether	1163195	30 (S)	30 (S)	NA	30 (S)	30 (S)	30 (S)	30	ID	ID

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Di n butyl phthalate	84742	880	2,500	9.7	NLV	NLV	11,000 (S)	11,200	ID	ID
Di(2 ethylhexyl) adipate	103231	400 (A)	400 (A)	NA	NLV	NLV	470 (S)	471	ID	ID
Di n octyl phthalate	117840	130	380	ID	NLV	NLV	250	3,000	ID	ID
Diacetone alcohol (I)	123422	ID	ID	NA	NLV	NLV	ID	1.0E+9	1.0E+9 (D)	ID
Diazinon	333415	1.3	3.8	NA	NLV	NLV	1,100	60,800	ID	ID
Dibenzo(a,h)anthracene (Q)	53703	5.0 (M)	5.0 (M)	ID	NLV	NLV	5.0 (M)	2.49	ID	ID
Dibenzofuran	132649	ID	ID	4.0	ID	ID	ID	10,000	ID	ID
Dibromochloromethane	124481	100 (A,W)	100 (A,W)	ID	15,000	1.1E+5	9,500	2.60E+6	ID	ID
Dibromochloropropane	96128	0.2 (A)	0.2 (A)	NA	1,200 (S)	1,200 (S)	300	NA	ID	ID
Dibromomethane	74953	80	230	NA	ID	ID	5.1E+5	1.10E+7	ID	ID
1,2 Dichlorobenzene	95501	600 (A)	600 (A)	16	1.6E+5 (S)	1.6E+5 (S)	1.6E+5 (S)	1.56E+5	ID	1.6E+5 (S)
1,3 Dichlorobenzene	541731	600	600	38	ID	ID	1.1E+5 (S)	1.11E+5	ID	ID
1,4 Dichlorobenzene	106467	75 (A)	75 (A)	13	16,000	74,000 (S)	2,800	73,800	ID	ID
3,3' Dichlorobenzidine	91941	1.9	7.7	0.3 (M,X)	NLV	NLV	270	3,110	ID	ID
Dichlorodifluoromethane	75718	1,700	4,800	ID	2.2E+5	3.0E+5 (S)	3.0E+5 (S)	3.00E+5	ID	ID
1,1 Dichloroethane (I)	75343	680	2,500	ID	5.1E+6 (S)	5.1E+6 (S)	2.1E+6	5.06E+6	1.9E+5	ID
1,2 Dichloroethane (I)	107062	5.0 (A)	5.0 (A)	360 (X)	9,600	59,000	11,000	8.52E+6	1.3E+5	ID
1,1 Dichloroethylene (I)	75354	7.0 (A)	7.0 (A)	65 (X)	200	1,300	9,000	2.25E+6	48,000	1.4E+5
cis 1,2 Dichloroethylene (I)	156592	70 (A)	70 (A)	ID	3.5E+6 (S)	3.5E+6 (S)	1.7E+5	3.50E+6	2.7E+5	ID
trans 1,2 Dichloroethylene	156605	100 (A)	100 (A)	ID	6.3E+6 (S)	6.3E+6 (S)	1.9E+5	6.30E+6	1.2E+5	ID
2,6 Dichloro 4 nitroaniline	99309	2,200	6,300	NA	NLV	NLV	7,000 (S)	7,000	ID	ID
2,4 Dichlorophenol	120832	73	210	19	NLV	NLV	40,000	4.50E+6	ID	ID
2,4 Dichlorophenoxyacetic acid	94757	70 (A)	70 (A)	220	NLV	NLV	1.1E+5	6.80E+5	ID	ID
1,2 Dichloropropane (I)	78875	5.0 (A)	5.0 (A)	290 (X)	16,000	36,000	7,500	2.80E+6	2.7E+5	2.8E+6 (S)
1,3 Dichloropropene (I,J)	542756	4.7	19	NA	300	2,000	2,600	2.80E+6	66,000	ID
Dichlorvos	62737	2.9	12	NA	NLV	NLV	11,000	1.60E+7	ID	ID

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Dicyclohexyl phthalate	84617	ID	ID	NA	ID	ID	ID	4,000	ID	ID
Dieldrin	60571	0.053	0.22	0.02 (M)	200 (S)	200 (S)	0.9	195	ID	ID
Diethyl ether (I)	60297	10 (E,M)	10 (E,M)	ID	6.1E+7 (S)	6.1E+7 (S)	3.3E+7	6.10E+7	3.2E+5	6.1E+7 (S)
Diethyl phthalate	84662	5,500	16,000	NA	NLV	NLV	1.1E+6 (S)	1.08E+6	ID	ID
Diethylene glycol monobutyl ether	112345	88	250	NA	NLV	NLV	4.3E+6	1.0E+9	ID	ID
Diisopropylamine (I)	108189	5.6	16	NA	ID	ID	19,000	3.69E+7	2.3E+6	ID
Dimethyl phthalate	131113	73,000	2.1E+5	NA	NLV	NLV	4.2E+6 (S)	4.19E+6	ID	ID
N,N Dimethylacetamide	127195	180	520	4,100 (X)	NLV	NLV	2.6E+7	1.0E+9	ID	ID
N,N Dimethylaniline	121697	16	46	NA	2.4E+5	1.3E+6 (S)	16,000	1.27E+6	ID	1.3E+6 (S)
Dimethylformamide (I)	68122	700	2,000	NA	NLV	NLV	1.3E+8	1.0E+9	ID	ID
2,4 Dimethylphenol	105679	370	1,000	12	NLV	NLV	4.4E+5	7.87E+6	ID	ID
2,6 Dimethylphenol	576261	5.0 (M)	13	NA	NLV	NLV	5,300	6.14E+6	ID	ID
3,4 Dimethylphenol	95658	10	29	NA	NLV	NLV	15,000	4.93E+6	ID	ID
Dimethylsulfoxide	67685	2.2E+5	6.3E+5	1.9E+5	NLV	NLV	1.7E+8 (S)	1.66E+8	ID	ID
2,4 Dinitrotoluene	121142	5.0 (M)	5.1	NA	NLV	NLV	1,300	2.70E+5	ID	ID
Dinoseb	88857	7.0 (A)	7.0 (A)	NA	ID	ID	6,100	52,000	ID	ID
1,4 Dioxane (I)	123911	77	320	2,800 (X)	NLV	NLV	1.7E+6	9.00E+8	7.2E+7	ID
Diquat	85007	20 (A)	20 (A)	NA	NLV	NLV	7.0E+5 (S)	7.00E+5	ID	ID
Diuron	330541	31	90	NA	NLV	NLV	37,000 (S)	37,300	ID	ID
Endosulfan I (I)	115297	1.7	4.8	NA	ID	ID	510 (S)	510	ID	ID
Endothall	145733	100 (A)	100 (A)	NA	NLV	NLV	3.0E+7	1.00E+8	ID	ID
Endrin	72208	2.0 (A)	2.0 (A)	IP	NLV	NLV	120	250	ID	ID
Epichlorohydrin (I)	106898	86	350	NA	3.2E+5	6.3E+5	6.8E+5	6.60E+7	2.3E+7	ID
Ethanol (I)	64175	1.9E+6	3.8E+6	IP	NLV	NLV	1.0E+9 (D)	1.0E+9	4.8E+7	ID
Ethyl acetate (I)	141786	6,600	19,000	NA	6.4E+7 (S)	6.4E+7 (S)	6.4E+7(S)	6.40E+7	2.1E+6	ID
Ethylbenzene (I)	100414	74 (E)	74 (E)	16	1.7E+5 (S)	1.7E+5 (S)	1.7E+5 (S)	1.69E+5	22,000	1.7E+5 (S)
Ethylene dibromide	106934	0.05 (A)	0.05 (A)	NA	2,400	15,000	16	4.20E+6	ID	ID
Ethylene glycol	107211	15,000	42,000	NA	NLV	NLV	1.0E+9 (S)	1.0E+9	ID	1.0E+9 (D)
Ethylene glycol monobutyl ether	111762	200	560	NA	53,000	1.2E+5	2.8E+6	2.24E+8	ID	ID
Fluoranthene	206440	210 (S)	210 (S)	1.6	210 (S)	210 (S)	210 (S)	206	ID	ID
Fluorene	86737	880	2,000 (S)	12	2,000 (S)	2,000 (S)	2,000 (S)	1,980	ID	ID
Fluoride (soluble fluoride) (B)	7782414	2,000 (A,E)	2,000 (A,E)	NA	NLV	NLV	1.3E+7	NA	ID	ID

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		#1	#2	#3	#4	#5	#6	#7	#8	#9
Chemical	Chemical Abstract Service Number	Residential & Commercial I Drinking Water Criteria	Industrial & Commercial II, III & IV Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Residential & Commercial I Groundwater Volatilization to Indoor Air Inhalation Criteria	Industrial & Commercial II, III & IV Groundwater Volatilization to Indoor Air Inhalation Criteria	Groundwater Contact Criteria (AA)	Water Solubility	Flammability and Explosivity Screening Level	Acute Inhalation Screening Level
Formaldehyde	50000	1,300	3,800	120	63,000	3.6E+5	2.9E+7	5.50E+8	ID	61,000
Formic acid (L,U)	64186	18,000 (M)	29,000	ID	7.7E+6	1.5E+7	6.2E+8	1.0E+9	6.6E+8	3.5E+8
1 Formylpiperidine	2591868	80	230	NA	ID	ID	ID	NA	ID	ID
Gentian violet	548629	8.5	35	NA	NLV	NLV	4.9E+5	1.00E+6	ID	ID
Glyphosate	1071836	700 (A)	700 (A)	NA	NLV	NLV	ID	1.16E+7	ID	ID
Heptachlor	76448	0.4 (A)	0.4 (A)	NA	180 (S)	180 (S)	0.71	180	ID	ID
Heptachlor epoxide	1024573	0.2 (A)	0.2 (A)	NA	NLV	NLV	3.1	200	ID	ID
n-Heptane (I)	142825	32,000	92,000	NA	2,700 (S)	2,700 (S)	2,700 (S)	2,690	100	2,700 (S)
Hexabromobenzene	87821	10 (M)	10 (M)	ID	ID	ID	10 (M)	0.17	ID	ID
Hexachlorobenzene (C-66)	118741	1.0 (A)	1.0 (A)	ID	440	3,000	2.0	6,200	ID	ID
Hexachlorobutadiene (C-46)	87683	11	45	ID	1,600	3,200 (S)	200	3,230	ID	ID
alpha Hexachlorocyclohexane	319846	0.11	0.55	NA	2,000 (S)	2,000 (S)	16	2,000	ID	ID
beta Hexachlorocyclohexane	319857	0.47	1.9	NA	NLV	NLV	54	240	ID	ID
Hexachlorocyclopentadiene (C-56)	77474	50 (A)	50 (A)	ID	ID	ID	1,400	1,800	ID	ID
Hexachloroethane	67721	61	250	6.7 (X)	27,000	50,000 (S)	1,500	50,000	ID	ID
n-Hexane (I)	110543	3,000	8,600	NA	12,000 (S)	12,000 (S)	12,000 (S)	12,000	12,000 (S)	ID
2 Hexanone (I)	591786	1,000	2,900	NA	4.2E+6	8.8E+6	4.8E+6	1.60E+7	ID	ID
Indeno(1,2,3-cd)pyrene (Q)	193395	5.0 (M)	5.0 (M)	ID	NLV	NLV	5.0 (M)	0.022	ID	ID
Iron (B)	7439896	300 (E)	300 (E)	NA	NLV	NLV	ID	NA	ID	ID
Isobutyl alcohol (I)	78831	2,300	6,700	NA	7.6E+7 (S)	7.6E+7 (S)	2.4E+7	7.60E+7	ID	ID
Isophorone	78591	900	3,700	570 (X)	NLV	NLV	1.1E+6	1.20E+7	ID	1.2E+7 (S)
Isopropyl alcohol (I)	67630	470	1,300	NA	NLV	NLV	1.3E+7	1.0E+9	3.0E+7	1.0E+9 (D)
Isopropyl benzene (I)	98828	800	2,300	ID	56,000 (S)	56,000 (S)	56,000 (S)	56,000	15,000	ID
Lead (B)	7439921	4.0 (L)	4.0 (L)	(G,X)	NLV	NLV	ID	NA	ID	ID
Lindane	58899	0.2 (A)	0.2 (A)	0.027	ID	ID	86	6,800	ID	ID
Lithium (B)	7439932	170	350	25	NLV	NLV	6.0E+6	NA	ID	ID
Magnesium (B)	7439954	4.2E+5	1.2E+6	NA	NLV	NLV	1.0E+9 (D)	NA	ID	ID

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Manganese (B)	7439965	50 (E)	50 (E)	(G,X)	NLV	NLV	1.0E+7	NA	ID	ID
Mercury (inorganic) (B)	7439976	2.0 (A)	2.0 (A)	0.2 (M)	NLV	NLV	56 (S)	56	ID	ID
Methane	74828	ID	ID	ID	(K)	(K)	ID	NA	(K)	ID
Methanol (I)	67561	3,700	10,000	ID	2.5E+6	6.0E+6	2.9E+7 (S)	2.90E+7	2.3E+6	2.9E+7 (S)
Methoxychlor	72435	40 (A)	40 (A)	NA	ID	ID	45 (S)	45	ID	ID
2-Methoxyethanol (I)	109864	7.3	20	NA	NLV	NLV	9.1E+5	1.0E+9	ID	ID
2-Methyl 4 chlorophenoxyacetic acid	94746	7.3	21	NA	NLV	NLV	8,200	9.24E+5	ID	ID
2-Methyl 4,6 dinitrophenol	534521	20 (M)	20 (M)	NA	NLV	NLV	8,800	2.00E+5	ID	ID
Methyl parathion	298000	1.8	5.2	NA	NLV	NLV	2,700	50,000	ID	ID
4 Methyl 2 pentanone (MIBK) (I)	108101	1,800	5,200	ID	2.0E+7 (S)	2.0E+7 (S)	1.2E+7	2.00E+7	ID	2.0E+7 (S)
Methyl tert butyl ether (MTBE)	1634044	40 (E)	40 (E)	730 (X)	4.7E+7 (S)	4.7E+7 (S)	6.5E+5	4.68E+7	ID	ID
N Methyl morpholine (I)	109024	20	56	NA	NLV	NLV	1.6E+6	1.0E+9	ID	ID
Methylcyclopentane (I)	96377	ID	ID	NA	ID	ID	ID	73,890	ID	ID
4,4' Methylene bis 2-chloroaniline (MBOCA)	101144	0.88	3.6	NA	NLV	NLV	71	14,000	ID	ID
Methylene chloride	75092	5.0 (A)	5.0 (A)	940 (X)	2.2E+5	1.4E+6	1.1E+5	1.70E+7	ID	ID
2 Methylnaphthalene	91576	260	750	ID	ID	ID	32,000	24,600	ID	ID
2-Methylphenol	95487	370	1,000	82	NLV	NLV	7.1E+5	2.60E+7	ID	ID
3 Methylphenol	108394	370	1,000	NA	NLV	NLV	7.3E+5	2.30E+7	ID	ID
4 Methylphenol	106445	37	100	ID	NLV	NLV	75,000	2.30E+7	ID	ID
Metolachlor	51218452	160	670	NA	NLV	NLV	55,000	5.30E+5	ID	ID
Molybdenum (B)	7439987	37	100	800 (X)	NLV	NLV	1.1E+6	NA	ID	ID
Naphthalene	91203	260	750	13	31,000 (S)	31,000 (S)	31,000 (S)	31,000	31,000 (S)	31,000 (S)
Nickel (B)	7440020	100 (A)	100 (A)	(G)	NLV	NLV	1.6E+7	NA	ID	ID
Nitrate (B,N)	14797558	10,000 (A,N)	10,000 (A,N)	NA	NLV	NLV	3.4E+8	NA	ID	ID
Nitrite (B,N)	14797650	1,000 (A,N)	1,000 (A,N)	NA	NLV	NLV	2.1E+7	NA	ID	ID
Nitrobenzene (I)	98953	5.0 (M)	9.6	180 (X)	2.1E+6 (S)	2.1E+6 (S)	9,600	2.09E+6	ID	ID
2 Nitrophenol	88755	20	58	ID	NLV	NLV	72,000	2.50E+6	ID	ID
n Nitroso di n propylamine	621647	5.0 (M)	5.0 (M)	NA	NLV	NLV	220	9.89E+6	ID	ID
N Nitrosodiphenylamine	86306	170	710	NA	NLV	NLV	30,000	35,100	ID	ID
Oxamyl	23135220	200 (A)	200 (A)	NA	NLV	NLV	7.4E+7	2.80E+8	ID	ID
Oxo hexyl acetate	88230357	73	210	NA	ID	ID	ID	NA	ID	ID
Pendimethalin	40487421	280 (S)	280 (S)	NA	NLV	NLV	280 (S)	275	ID	ID

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Pentachlorobenzene	608935	6.1	17	NA	ID	ID	170	650	ID	ID
Pentachloronitrobenzene	82688	32 (S)	32 (S)	NA	32 (S)	32 (S)	32 (S)	32	ID	ID
Pentachlorophenol	87865	1.0 (A)	1.0 (A)	(G,X)	NLV	NLV	85	1.85E+6	ID	ID
Pentane (I)	109660	ID	ID	NA	38,000 (S)	38,000 (S)	ID	38,200	170	38,000 (S)
2 Pentene (I)	109682	ID	ID	NA	ID	ID	ID	2.03E+5	ID	ID
Phenanthrene	85018	26	75	5.0 (M)	1,000 (S)	1,000 (S)	1,000 (S)	1,000	ID	ID
Phenol	108952	4,400	13,000	210	NLV	NLV	2.8E+7	8.28E+7	ID	ID
Phosphorus (total)	7723140	63,000	2.4E+5	NA	NLV	NLV	ID	NA	ID	ID
Picloram	1918021	500 (A)	500 (A)	NA	NLV	NLV	4.3E+5 (S)	4.30E+5	ID	ID
Pipendine	110894	3.2	9.2	NA	NLV	NLV	32,000	1.0E+9	ID	ID
Polybrominated biphenyls (J)	37324235	0.096	0.39	IP	NLV	NLV	ID	1.66E+7	ID	ID
Polychlorinated biphenyls (PCBs) (J,T)	1336363	0.5 (A)	0.5 (A)	0.2 (M)	45 (S)	45 (S)	2.30	44.7	ID	ID
Prometon	1610180	160	460	NA	NLV	NLV	1.6E+5	7.50E+5	ID	ID
Propachlor	1918167	95	270	NA	NLV	NLV	4.2E+5	6.55E+5	ID	ID
Propazine	139402	200	560	NA	NLV	NLV	8,600 (S)	8,600	ID	ID
Propionic acid (I)	79094	18,000 (M)	35,000 (M)	ID	NLV	NLV	2.7E+8	1.0E+9	ID	ID
Propyl alcohol (I)	71238	1,400	4,000	NA	NLV	NLV	2.7E+7	1.0E+9	3.6E+7	1.0E+9 (D)
n Propylbenzene (I)	103651	80	230	ID	ID	ID	ID	NA	ID	ID
Propylene glycol	57556	1.5E+5	4.2E+5	NA	NLV	NLV	1.0E+9 (D)	1.0E+9	ID	ID
Pyrene	129000	140 (S)	140 (S)	ID	140 (S)	140 (S)	140 (S)	135	ID	ID
Pyridine (I)	110861	7.3	21	NA	5,500	12,000	90,000	3.00E+5	41,000	ID
Selenium (B)	7782492	50 (A)	50 (A)	5.0	NLV	NLV	1.1E+6	NA	ID	ID
Silver (B)	7440224	34	98	0.2 (M)	NLV	NLV	1.0E+6	NA	ID	ID
Silvex (2,4,5 TP)	93721	50 (A)	50 (A)	NA	NLV	NLV	37,000	1.40E+5	ID	ID
Simazine	122349	4.0 (A)	4.0 (A)	NA	NLV	NLV	4,500 (S)	4,470	ID	ID
Sodium (B)	7440235	1.6E+5	4.5E+5	NA	NLV	NLV	1.0E+9 (D)	NA	ID	ID
Strontium (B)	7440246	4,600	13,000	760	NLV	NLV	1.3E+8	NA	ID	ID
Styrene (I)	100425	100 (A)	100 (A)	80	1.6E+5	3.1E+5 (S)	3,200	3.10E+5	68,000	3.1E+5 (S)

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Sulfate	14808798	2.5E+5 (E)	2.5E+5 (E)	NA	NLV	NLV	ID	NA	ID	ID
Tebuthiuron	34014181	510	1,500	NA	NLV	NLV	2.5E+6 (S)	2.50E+6	ID	ID
2,3,7,8 Tetrabromodibenzo p dioxin (O)	50585416	(O)	(O)	NA	NLV	NLV	1.0E-4 (M)	0.00996	ID	ID
1,2,4,5 Tetrachlorobenzene	95943	1,300 (S)	1,300 (S)	B*	ID	ID	1,300 (S)	1,300	ID	ID
2,3,7,8 Tetrachlorodibenzo p dioxin (O)	1746016	3.0E-5 (A)	3.0E-5 (A)	1.0E-5 (M)	NLV	NLV	1.0E-5 (M)	0.019	ID	ID
1,1,1,2 Tetrachloroethane	630206	33	130	NA	15,000	96,000	11,000	1.10E+6	ID	ID
1,1,2,2 Tetrachloroethane	79345	4.3	17	78 (X)	12,000	77,000	2,100	2.97E+6	ID	ID
Tetrachloroethylene	127184	5.0 (A)	5.0 (A)	45 (X)	25,000	1.7E+5	5,100	2.0E+5	ID	2.0E+5 (S)
Tetrahydrofuran (I)	109999	240	690	11,000 (X)	6.9E+6	1.6E+7	3.9E+6	1.0E+9	30,000	3.6E+6
Thallium (B)	7440280	2.0 (A)	2.0 (A)	3.7 (X)	NLV	NLV	14,000	NA	ID	ID
Toluene (I)	108883	790 (E)	790 (E)	140	5.3E+5 (S)	5.3E+5 (S)	5.3E+5 (S)	5.26E+5	31,000	ID
p Toluidine	106490	4.5	18	NA	NLV	NLV	6,500	7.60E+6	ID	ID
Toxaphene	8001352	3.0 (A)	3.0 (A)	1.0 (M)	NLV	NLV	13	740	ID	740 (S)
Triallate	2303175	95	270	NA	ID	ID	4,000 (S)	4,000	ID	ID
Tributylamine	102829	10	29	ID	14,000	75,000 (S)	680	75,400	ID	ID
1,2,4 Trichlorobenzene	120821	70 (A)	70 (A)	30	3.0E+5 (S)	3.0E+5 (S)	15,000	3.00E+5	ID	3.0E+5 (S)
1,1,1 Trichloroethane	71556	200 (A)	200 (A)	200	6.6E+5	1.3E+6 (S)	2.2E+5	1.33E+6	ID	1.3E+6 (S)
1,1,2 Trichloroethane	79005	5.0 (A)	5.0 (A)	330 (X)	17,000	1.1E+5	9,500	4.42E+6	1.8E+6	ID
Trichloroethylene	79016	5.0 (A)	5.0 (A)	200 (X)	15,000	97,000	11,000	1.10E+6	ID	1.1E+6 (S)
Trichlorofluoromethane	75694	2,600	7,300	NA	1.1E+6 (S)	1.1E+6 (S)	1.1E+6 (S)	1.10E+6	ID	1.1E+6 (S)
2,4,5 Trichlorophenol	95954	730	2,100	NA	NLV	NLV	1.3E+5	1.20E+6	ID	ID
2,4,6 Trichlorophenol	88062	77	320	5.0 (M)	NLV	NLV	5,500	8.00E+5	ID	ID
1,2,3 Trichloropropane	96184	42	120	NA	ID	ID	74,000	1.90E+6	ID	ID
1,1,2 Trichloro 1,2,2 trifluoroethane	76131	1.7E+5 (S)	1.7E+5 (S)	NA	1.7E+5 (S)	1.7E+5 (S)	1.7E+5 (S)	1.70E+5	ID	1.7E+5 (S)
Triethanolamine	102716	3,700	10,000	NA	NLV	NLV	1.0E+9 (D)	1.0E+9	ID	ID
3 Trifluoromethyl 4 nitrophenol	88302	4,500	13,000	NA	NLV	NLV	4.7E+6	5.00E+6	ID	ID
Trifluralin	1582098	110	450	NA	ID	ID	1,500	8,100	ID	ID
2,2,4 Trimethyl pentane	540841	ID	ID	NA	ID	ID	ID	2,330	ID	ID
2,2,4 Trimethyl 2 pentene (I)	107404	ID	ID	NA	ID	ID	ID	11,900	ID	ID
1,2,4 Trimethylbenzene (I)	95636	63 (E)	63 (E)	ID	56,000 (S)	56,000 (S)	1.6E+5	55,890	37,000	ID
1,3,5 Trimethylbenzene (I)	108678	72 (E)	72 (E)	ID	61,000 (S)	61,000 (S)	2.1E+5	61,150	ID	ID
Triphenyl phosphate	115866	1,200	1,400 (S)	NA	NLV	NLV	1,400 (S)	1,430	ID	ID

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tris(2,3 Dibromopropyl)phosphate	126727	0.47	1.9	NA	4,700 (S)	4,700 (S)	1,500	4,700	ID	ID
Urea	57136	ID (N)	ID (N)	NA	NLV	NLV	ID	NA	ID	ID
Vanadium (B)	7440622	64	180	12	NLV	NLV	1.9E+6	NA	ID	ID
Vinyl acetate (I)	108054	640	1,800	NA	4.1E+6	8.9E+6	7.7E+6	2.00E+7	8.8E+5	4.8E+6
Vinyl chloride	75014	2.0 (A)	2.0 (A)	15	110	690	290	2.76E+6	17,000	ID
White phosphorus (H)	12185103	0.11	0.31	NA	NLV	NLV	3,200	NA	ID	ID
Xylenes (I)	1330207	280 (E)	280 (E)	35	1.9E+5 (S)	1.9E+5 (S)	1.9E+5 (S)	1.86E+5	35,000	1.9E+5 (S)
Zinc (B)	7440666	2,400	5,000 (E)	(G)	NLV	NLV	7.0E+7	NA	ID	ID

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

Developed under the authority of the

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED

Residential and Commercial I soil criteria were calculated using currently available toxicological and chemical-specific data. These criteria may change as new data become available. They are not necessarily final cleanup standards. Current criteria are available on the ERD Homepage at www.deq.state.mi.us/erd. Scientific notation is represented by E+ or E- a value, for example 2×10^6 is reported as 2.0E+6. Please refer to Operational Memorandum #6 for analytical methods and method detection limits. All values are expressed in units of parts per billion (ug/Kg).

Changes made since the last revision of the tables (January 1999) are shaded

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 2 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Acenaphthene	83329	NA	3.0E+5	4,300	9.6E+5	1.9E+8	8.1E+7	8.1E+7	8.1E+7	1.4E+10	7.6E+7	NA
Acenaphthylene	208968	NA	2,900	ID	4.4E+5	1.6E+6	2.2E+6	2.2E+6	2.2E+6	2.3E+9	1.5E+6	NA
Acetaldehyde (I)	75070	NA	19,000	NA	1.1E+8 (C)	2.2E+5	1.7E+5	1.7E+5	2.8E+5	6.0E+8	1.4E+7	1.1E+8
Acetic acid (I)	64197	NA	9.0E+5 (M)	9.0E+5 (M)	6.5E+8 (C)	NLV	NLV	NLV	NLV	1.7E+10	6.3E+7	6.5E+8
Acetone (I)	67641	NA	15,000	34,000	1.1E+8 (C)	1.1E+8 (C)	1.3E+8	1.3E+8	1.9E+8	3.9E+11	1.1E+7	1.1E+8
Acetonitrile (I)	75058	NA	2,600	NA	2.2E+7 (C)	2.2E+7 (C)	9.2E+6	9.2E+6	1.2E+7	2.3E+10	2.1E+6	2.2E+7
Acrolein (I)	107028	NA	2,400	NA	2.3E+7 (C)	410	310	310	610	1.3E+6	1.8E+8	2.3E+7
Acrylamide	79061	NA	10	NA	1.7E+5	NLV	NLV	NLV	NLV	2.4E+6	2,200	NA
Acrylic acid (I)	79107	NA	78,000	NA	1.3E+8 (C)	2.6E+6	2.2E+5	2.3E+5	2.3E+5	6.7E+7	5.8E+7	1.3E+8
Acrylonitrile (I)	107131	NA	32	98 (X)	1.6E+5	6,600	5,000	5,100	10,000	4.6E+7	4,700	8.3E+6
Alachlor	15972608	NA	52	290 (X)	ID	NLV	NLV	NLV	NLV	ID	1.2E+5	NA
Aldicarb	116063	NA	60	NA	2.4E+6	NLV	NLV	NLV	NLV	ID	4.2E+5	NA
Aldicarb sulfoxide	1646873	NA	80	NA	6.4E+7	NLV	NLV	NLV	NLV	ID	5.5E+5	NA
Aldicarb sulfone	1646884	NA	50 (M)	NA	5.2E+7	NLV	NLV	NLV	NLV	ID	4.6E+5	NA
Aldrin	309002	NA	NLL	NLL	NLL	1.3E+6	58,000	58,000	58,000	6.4E+5	500	NA
Aluminum (B)	7429905	6.0E+6	1,000	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	4.2E+7	NA
Ammonia	7664417	NA	ID (N)	(AC)	ID	ID	ID	ID	ID	6.7E+9	ID	1.0E+7
Aniline (I)	62533	NA	3,000	IP	4.5E+6 (C)	NLV	NLV	NLV	NLV	6.7E+7	1.7E+6	4.5E+6
Anthracene	120127	NA	41,000	ID	41,000	1.0E+9 (D)	1.4E+9	1.4E+9	1.4E+9	6.7E+10	4.2E+8	NA
Antimony (B)	7440360	NA	4,300	ID	5.4E+7	NLV	NLV	NLV	NLV	3.3E+8	1.5E+5	NA
Arsenic (B)	7440382	5,800	23,000	70,000 (X)	2.2E+6	NLV	NLV	NLV	NLV	7.2E+5	6,600	NA
Asbestos (AD)	1332214	NA	ID	NA	ID	NLV	NLV	NLV	NLV	1.0E+7 (M)	1.0E+7	NA
Atrazine	1912249	NA	60	150 (X)	32,000	NLV	NLV	NLV	NLV	ID	45,000	NA

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Azobenzene	103333	NA	1,400	NA	76,000	1.1E+5	ID	ID	ID	1.0E+8	90,000	NA
Barium (B)	7440393	75,000	1.3E+6	1.3E+5	1.0E+9 (D)	NLV	NLV	NLV	NLV	3.3E+8	3.0E+7	NA
Benzene (I)	71432	NA	100	4,000 (X)	1.9E+5	1,600	13,000	34,000	79,000	3.8E+8	88,000	4.0E+5
Benzidine	92875	NA	1,000 (M)	ID	1,000 (M)	NLV	NLV	NLV	NLV	46,000	1,000 (M)	NA
Benzo(a)anthracene (Q)	56553	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	14,000	NA
Benzo(b)fluoranthene (Q)	205992	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	14,000	NA
Benzo(k)fluoranthene (Q)	207089	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	1.4E+5	NA
Benzo(g,h,i)perylene	191242	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	8.0E+8	1.5E+6	NA
Benzo(a)pyrene (Q)	50328	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1.5E+6	1,400	NA
Benzoic acid	65850	NA	6.4E+5	NA	7.0E+7	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	NA
Benzyl alcohol	100516	NA	2.0E+5	NA	5.8E+6 (C)	NLV	NLV	NLV	NLV	3.3E+11	5.8E+6 (C)	5.8E+8
Benzyl chloride	100447	NA	100	NA	40,000	6,300	14,000	14,000	17,000	6.2E+7	15,000	2.3E+5
Beryllium (B)	7440417	NA	51,000	(G)	1.0E+9	NLV	NLV	NLV	NLV	1.3E+6	2.1E+6	NA
bis(2-chloroethoxy)ethane	112265	NA	ID	NA	ID	NLV	NLV	NLV	NLV	ID	ID	2.7E+8
bis(2-Chloroethyl)ether (I)	111444	NA	330 (M)	NA	42,000	8,300	3,800	3,800	3,800	9.4E+6	2,300	2.2E+6
bis(2-Ethylhexyl)phthalate	117817	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	7.0E+8	7.0E+5	1.0E+7
Boron (B)	7440428	NA	10,000	38,000	2.6E+8	NLV	NLV	NLV	NLV	ID	2.2E+6	NA
Bromobenzene (I)	108861	NA	530	NA	3.0E+5	3.1E+5	4.5E+5	4.5E+5	4.5E+5	5.3E+8	4.1E+4	7.6E+5
Bromodichloromethane	75274	NA	2,000 (W)	ID	2.2E+5	1,200	9,100	9,700	19,000	8.4E+7	41,000	1.5E+6
Bromoform	75252	NA	2,000 (W)	NA	8.7E+5 (C)	1.5E+5	9.0E+5	9.0E+5	9.0E+5	2.8E+9	3.2E+5	8.7E+5
Bromomethane	74839	NA	200	700	1.3E+6	860	11,000	57,000	1.4E+5	3.3E+8	1.5E+5	2.2E+6
n-Butanol (I)	71363	NA	19,000	NA	8.7E+6 (C)	NLV	NLV	NLV	NLV	2.3E+10	8.7E+6 (C)	8.7E+6
2-Butanone (MEK) (I)	78933	NA	2.6E+5	44,000	2.7E+7 (C)	2.7E+7 (C)	2.9E+7	2.9E+7	3.5E+7	6.7E+10	2.7E+7 (C)	2.7E+7
n-Butyl acetate (I)	123864	NA	11,000	NA	1.1E+6 (C)	1.1E+6 (C)	ID	ID	ID	6.3E+10	1.1E+6 (C)	1.1E+6
t-Butyl alcohol (I)	75650	NA	78,000	NA	1.1E+8 (C)	1.1E+8 (C)	ID	ID	ID	2.0E+11	5.9E+7	1.1E+8
Butyl benzyl phthalate	85687	NA	3.1E+5 (C)	26,000 (X)	3.1E+5 (C)	NLV	NLV	NLV	NLV	4.7E+10	3.1E+5 (C)	3.1E+5
n-Butylbenzene	104518	NA	1,600	NA	ID	ID	ID	ID	ID	ID	1.2E+6	1.0E+7
sec-Butylbenzene	135988	NA	1,600	NA	ID	ID	ID	ID	ID	ID	1.20E+06	1.0E+7
tert-Butylbenzene (I)	98066	NA	1,600	NA	ID	ID	ID	ID	ID	ID	1.2E+6	1.0E+7
Cadmium (B)	7440439	1,200	6,000	(G,X)	2.5E+8	NLV	NLV	NLV	NLV	1.7E+6	4.2E+5	NA
Camphene (I)	79925	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	NA
Caprolactam	105602	NA	1.2E+5	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	6.7E+8	3.4E+8	NA

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Carbaryl	63252	NA	14,000	NA	2.6E+6	ID	ID	ID	ID	ID	4.1E+7	NA
Carbazole	86748	NA	860	330 (M)	3.2E+5	NLV	NLV	NLV	NLV	ID	1.3E+5	NA
Carbofuran	1563662	NA	800	NA	6.6E+6	NLV	NLV	NLV	NLV	ID	5.5E+5	NA
Carbon disulfide (I,H)	75150	NA	16,000	ID	2.8E+5 (C)	76,000	1.3E+6	7.9E+6	1.9E+7	4.7E+10	2.8E+5 (C)	2.8E+5
Carbon tetrachloride	56235	NA	100	900 (X)	32,000	190	3,500	12,000	28,000	1.3E+8	20,000	3.9E+5
Chlordane (J)	57749	NA	NLL	NLL	NLL	1.1E+7	1.2E+6	1.2E+6	1.2E+6	3.1E+7	1.7E+4	NA
Chloride (B)	16887006	NA	5.0E+6	NA	ID	NLV	NLV	NLV	NLV	ID	5.0E+5 (F)	NA
Chlorobenzene (I)	108907	NA	2,000	940	2.6E+5 (C)	1.2E+5	7.7E+5	9.9E+5	2.1E+6	4.7E+9	2.6E+5 (C)	2.6E+5
Chloroethane (I)	75003	NA	4,400	ID	9.7E+5 (C)	9.7E+5 (C)	3.1E+7	1.2E+8	2.8E+8	6.7E+11	6.7E+5	9.7E+5
2-Chloroethyl vinyl ether	110758	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	1.8E+6
Chloroform	67663	NA	2,000 (W)	3,400 (X)	1.5E+6 (C)	7,200	45,000	1.2E+5	2.7E+5	1.3E+9	4.2E+5	1.5E+6
Chloromethane (I)	74873	NA	1,300	ID	1.1E+6 (C)	2,300	40,000	4.1E+5	1.0E+6	4.9E+9	2.0E+5	1.1E+6
4-Chloro-3-methylphenol	59507	NA	5,600	NA	2.4E+6	NLV	NLV	NLV	NLV	ID	2.2E+8	NA
beta-Chloronaphthalene	91587	NA	6.5E+5	NA	2.3E+6	ID	ID	ID	ID	ID	2.7E+7	NA
2-Chlorophenol	95578	NA	900	440	1.6E+6	ID	ID	ID	ID	ID	6.8E+5	8.1E+6
o-Chlorotoluene (I)	95498	NA	3,300	NA	5.0E+5 (C)	5.0E+5 (C)	ID	ID	ID	1.7E+11	5.0E+5 (C)	5.0E+5
Chlorpyrifos	2921882	NA	17,000	NA	8.4E+5	ID	ID	ID	ID	1.3E+8	1.3E+6	NA
Chromium (III) (D,H)	16065831	18,000 (total)	1.0E+9 (D)	(G,X)	1.0E+9 (D)	NLV	NLV	NLV	NLV	3.3E+8	6.3E+8	NA
Chromium (VI) (D,H)	18540299	18,000 (total)	30,000	3,300	3.0E+8	NLV	NLV	NLV	NLV	2.6E+5	2.0E+6	NA
Chrysene (Q)	218019	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	1.4E+6	NA
Cobalt (B)	7440484	6,800	1,000	2,000	2.2E+7	NLV	NLV	NLV	NLV	1.3E+7	2.1E+6	NA
Copper (B)	7440508	32,000	1.6E+6	(G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	1.3E+8	1.6E+7	NA
Cyanazine	21725462	NA	500 (M)	1,100 (X)	34,000	NLV	NLV	NLV	NLV	ID	17,000	NA
Cyanide (H)	57125	NA	4,000	400	2.5E+5 (P)	NLV	NLV	NLV	NLV	2.5E+5 (P)	2.5E+5 (P)	NA
Cyclohexanone (I)	108941	NA	5.2E+6	NA	2.2E+8 (C)	17,000	ID	ID	ID	6.7E+10	2.2E+8 (C)	2.2E+8
Dacthal	1861321	NA	50,000	NA	3.4E+5	NLV	NLV	NLV	NLV	ID	4.2E+6	NA
Dalapon	75990	NA	4,000	NA	5.9E+7 (C)	NLV	NLV	NLV	NLV	ID	9.3E+6	5.9E+7
4,4'-DDD	72548	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	41,000	NA
4,4'-DDE	72559	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	29,000	NA
4,4'-DDT	50293	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	3.2E+7	29,000	NA
Decabromodiphenyl ether	1163195	NA	1.4E+5	NA	1.4E+5	1.0E+9 (D)	ID	ID	ID	2.3E+9	4.2E+6	NA
Di-n-butylphthalate	84742	NA	7.6E+5 (C)	11,000	7.6E+5 (C)	NLV	NLV	NLV	NLV	3.3E+9	7.6E+5 (C)	7.6E+5

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Di(2-ethylhexyl) adipate	103231	NA	9.6E+5 (C)	NA	9.6E+5 (C)	NLV	NLV	NLV	NLV	ID	9.6E+5 (C)	9.6E+5
Di-n-octyl phthalate	117840	NA	1.0E+8	ID	1.4E+8 (C)	NLV	NLV	NLV	NLV	ID	7.6E+6	1.4E+8
Diacetone alcohol (I)	123422	NA	ID	NA	ID	NLV	NLV	NLV	NLV	1.6E+11	ID	1.1E+8
Diazinon	333415	NA	95	NA	60,000	NLV	NLV	NLV	NLV	ID	76,000	3.1E+5
Dibenz(a,h)anthracene (C)	53703	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	1,400	NA
Dibenzofuran	132649	NA	ID	1,700	ID	ID	ID	ID	ID	ID	ID	NA
Dibromochloromethane	124481	NA	2,000 (W)	ID	1.9E+5	3,900	24,000	24,000	33,000	1.3E+8	31,000	6.1E+5
Dibromochloropropane	96128	NA	4.0	NA	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	300	1,200
Dibromomethane	74953	NA	1,600	NA	1.9E+6	ID	ID	ID	ID	ID	2.0E+6 (C)	2.0E+6
1,2 Dichlorobenzene	95501	NA	13,000	340	2.1E+5 (C)	2.1E+5 (C)	3.9E+7	3.9E+7	5.2E+7	1.0E+11	2.1E+5 (C)	2.1E+5
1,3 Dichlorobenzene	541731	NA	17,000	1,100	2.0E+5 (C)	ID	ID	ID	ID	ID	2.0E+5 (C)	2.0E+5
1,4 Dichlorobenzene	106467	NA	1,600	280	60,000	19,000	77,000	77,000	1.1E+5	4.5E+8	1.1E+5	NA
3,3 Dichlorobenzidine	91941	NA	2,000 (M)	2,000 (M,X)	6,900	NLV	NLV	NLV	NLV	6.5E+6	5,700	NA
Dichlorodifluoromethane	75718	NA	93,000	ID	1.0E+6 (C)	9.0E+5	5.3E+7	5.5E+8	1.4E+9	3.3E+12	1.0E+6 (C)	1.0E+6
1,1 Dichloroethane (I)	75343	NA	18,000	IP	7.9E+5 (C)	7.9E+5 (C)	3.0E+7	9.5E+7	2.3E+8	5.4E+11	7.9E+5 (C)	7.9E+5
1,2 Dichloroethane (I)	107062	NA	100	7,200 (X)	2.2E+5	2,100	6,100	11,000	26,000	1.2E+8	28,000	1.2E+8
1,1 Dichloroethylene (I)	75354	NA	140	1,300 (X)	1.6E+5	62	1,100	5,300	13,000	6.2E+7	99,000	5.8E+5
cis 1,2 Dichloroethylene (I)	156592	NA	1,400	ID	6.4E+5 (C)	6.4E+5 (C)	4.0E+7	9.6E+7	2.2E+8	5.3E+11	6.4E+5 (C)	6.4E+5
trans 1,2 Dichloroethylene	156605	NA	2,000	ID	1.4E+6 (C)	1.4E+6 (C)	3.1E+7	8.4E+7	2.2E+8	5.3E+11	1.4E+6 (C)	1.4E+6
2,6 Dichloro-4-nitroaniline	99309	NA	44,000	NA	1.4E+5	NLV	NLV	NLV	NLV	ID	1.3E+8	NA
2,4 Dichlorophenol	120832	NA	2,600	660	1.5E+6	NLV	NLV	NLV	NLV	5.1E+8	4.2E+6	1.0E+7
2,4 Dichlorophenoxyacetic acid	94757	NA	1,400	4,400	2.2E+6	NLV	NLV	NLV	NLV	6.7E+8	4.2E+6	NA
1,2 Dichloropropane (I)	78875	NA	100	5,600 (X)	1.5E+5	4,000	25,000	50,000	1.1E+5	2.7E+8	38,000	5.5E+5
1,3 Dichloropropene (I,J)	542756	NA	84	NA	52,000	79	1,400	5,200	12,000	6.0E+7	14,000	6.2E+5
Dichlorvos	62737	NA	58	NA	2.2E+5	NLV	NLV	NLV	NLV	3.3E+7	34,000	2.5E+6

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (V)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Bis(2-ethylhexyl) phthalate	84617	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	NA
Dieldrin	60571	NA	NLL	NLL	NLL	1.4E+5	19,000	19,000	19,000	6.8E+5	620	NA
Diethyl ether (I)	60297	NA	100 (M)	ID	7.4E+6 (C)	7.4E+6 (C)	8.6E+7	1.5E+8	3.4E+8	8.0E+11	7.4E+6 (C)	7.4E+6
Diethyl phthalate	84662	NA	1.1E+5	NA	7.4E+5 (C)	NLV	NLV	NLV	NLV	3.3E+9	7.4E+5 (C)	7.4E+5
Diethylene glycol monobutyl ether	112345	NA	1,800	NA	8.6E+7	NLV	NLV	NLV	NLV	1.3E+9	5.1E+6	1.1E+8
Diisopropylamine (I)	108189	NA	110	NA	3.8E+5	ID	ID	ID	ID	ID	85,000	8.7E+8
Dimethyl phthalate	131113	NA	7.9E+5 (C)	NA	7.9E+5 (C)	NLV	NLV	NLV	NLV	3.3E+9	7.9E+5 (C)	7.9E+5
N,N-Dimethylacetamide	127195	NA	3,600	82,000 (X)	1.1E+8 (C)	NLV	NLV	NLV	NLV	ID	2.7E+6	1.1E+8
N,N-Dimethylaniline	121697	NA	320	NA	3.2E+5	1.7E+5	ID	ID	ID	2.6E+8	2.4E+5	8.0E+5
Dimethylformamide (I)	68122	NA	14,000	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	2.0E+9	1.1E+7	1.1E+8
2,4-Dimethylphenol	105679	NA	7,400	330 (M)	8.8E+6	NLV	NLV	NLV	NLV	4.7E+9	2.1E+7	NA
2,6-Dimethylphenol	576261	NA	330 (M)	NA	1.1E+5	NLV	NLV	NLV	NLV	ID	2.5E+5	NA
3,4-Dimethylphenol	95658	NA	330 (M)	NA	3.0E+5	NLV	NLV	NLV	NLV	ID	5.9E+5	NA
Dimethylsulfoxide	67685	NA	4.4E+6	3.8E+6	1.8E+7 (C)	NLV	NLV	NLV	NLV	ID	1.8E+7 (C)	1.8E+7
2,4-Dinitrotoluene	121142	NA	15,000	NA	3.0E+6	NLV	NLV	NLV	NLV	1.6E+7	15,000	NA
Dinoseb	88857	NA	290	NA	1.4E+5 (C)	ID	ID	ID	ID	ID	1.4E+5 (C)	1.4E+5
1,4-Dioxane (I)	123911	NA	1,500	56,000 (X)	3.4E+7	NLV	NLV	NLV	NLV	5.7E+8	2.3E+5	9.7E+7
Diquat	85007	NA	400	NA	1.4E+7	NLV	NLV	NLV	NLV	ID	9.3E+5	NA
Diuron	330541	NA	620	NA	7.5E+5	NLV	NLV	NLV	NLV	ID	1.8E+6	NA
Endosulfan (I)	115297	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	87,000	NA
Endothall	145733	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	2.3E+8	7.2E+6	NA
Endrin	72208	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	72,000	NA
Epichlorohydrin (I)	106898	NA	1,700	NA	7.3E+6 (C)	64,000	31,000	31,000	35,000	6.7E+7	2.6E+5	7.3E+8
Ethanol (I)	64175	NA	3.8E+7	IP	1.1E+8 (C)	NLV	NLV	NLV	NLV	1.3E+12	1.1E+8 (C)	1.1E+8
Ethyl acetate (I)	141786	NA	1.3E+5	NA	7.5E+6 (C)	7.5E+6 (C)	4.9E+7	4.9E+7	9.8E+7	2.1E+11	7.5E+6 (C)	7.5E+6
Ethylbenzene (I)	100414	NA	1,500	360	1.4E+5 (C)	1.4E+5 (C)	9.5E+6	1.4E+7	3.0E+7	6.7E+10	1.4E+5 (C)	1.4E+5
Ethylene dibromide	106934	NA	10 (M)	NA	320	670	1,700	1,700	3,300	1.4E+7	30	8.9E+5
Ethylene glycol	107211	NA	3.0E+5	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	8.3E+10	1.1E+8 (C)	1.1E+8
Ethylene glycol monobutyl ether	111762	NA	3,900	NA	4.1E+7 (C)	14,000	3.3E+5	2.7E+6	6.6E+6	1.6E+10	3.0E+8	4.1E+7
Fluoranthene	206440	NA	7.2E+5	5,500	7.2E+5	1.0E+9 (D)	7.4E+8	7.4E+8	7.4E+8	9.3E+9	5.1E+7	NA
Fluorene	86737	NA	3.9E+5	2,400	8.9E+5	5.8E+8	1.3E+8	1.3E+8	1.3E+8	9.3E+9	5.1E+7	NA
Fluoride (soluble fluoride) (B)	7782414	NA	40,000	NA	2.0E+8	NLV	NLV	NLV	NLV	ID	2.5E+7	NA

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Level
Formaldehyde	50000	NA	26,000	2,400	6 0E+7 (C)	12,000	13 000	23,000	52,000	2 4E+8	2 0E+7	6 0E+7
Formic acid (LO)	64186	NA	9 0E+5 (M)	ID	1 1E+8 (C)	1 5E+6	9 0E+5 (M)	9 0E+5 (M)	9 0E+5 (M)	1 3E+8	1 1E+8 (C)	1 1E+8
1 Formylpiperidine	2591868	NA	1,600	NA	ID	ID	ID	ID	ID	ID	1 2E+6	1 0E+7
Gardan diolul	548629	NA	170	NA	9 8E+6	NLV	NLV	NLV	NLV	ID	89,000	NA
Glyphosate	1071836	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	4 2E+7	NA
Heptachlor	76448	NA	NLL	NLL	NLL	3 5E+5	61,000	61,000	61,000	2 4E+6	2,200	NA
Heptachlor epoxide	1024573	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1 2E+6	1,100	NA
n Heptane (I)	142825	NA	2 4E+5 (C)	NA	2 4E+5 (C)	2 4E+5 (C)	ID	ID	ID	2 3E+11	2 4E+5 (C)	2 4E+5
Hexabromobenzene	87821	NA	5,400	ID	1 0E+7	ID	ID	ID	ID	ID	1 2E+6	NA
Hexachlorobenzene (C 66)	118741	NA	1,600	ID	3,500	44,000	16,000	16,000	16,000	6 8E+6	6,200	NA
Hexachlorobutadiene (C 46)	87683	NA	19,000	ID	3 4E+5	1 3E+5	1 3E+5	1 3E+5	1 3E+5	1 4E+8	1 3E+5	3 5E+5
alpha Hexachlorocyclohexane	319846	NA	25	NA	2,800	1 3E+5	25,000	25,000	25,000	1 7E+6	1,600	NA
beta Hexachlorocyclohexane	319857	NA	85	NA	10,000	NLV	NLV	NLV	NLV	5 9E+6	5,500	NA
Hexachlorocyclopentadiene (C 56)	77474	NA	36,000	ID	81,000 (C)	ID	ID	ID	ID	ID	81,000 (C)	81,000
Hexachloroethane	67721	NA	17,000	1,800 (X)	4 1E+5	1 0E+5	1 2E+6	1 2E+6	1 2E+6	2 3E+8	1 8E+5	NA
n Hexane (I)	110543	NA	44,000 (C)	NA	44,000 (C)	44,000 (C)	ID	ID	ID	1 3E+10	44,000 (C)	44,000
2 Hexanone (I)	591786	NA	20,000	NA	2 5E+6 (C)	9 9E+5	ID	ID	ID	2 7E+9	2 5E+6 (C)	2 5E+6
Indeno(1 2 3 cd)pyrene (Q)	193395	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	14,000	NA
Iron (B)	7439896	1 2E+7	6,000	NA	ID	NLV	NLV	NLV	NLV	ID	ID	NA
Isobutyl alcohol (I)	78831	NA	46,000	NA	8 9E+6 (C)	8 9E+6 (C)	7 9E+7	7 9E+7	7 9E+7	1 0E+11	8 9E+6 (C)	8 9E+6
Isophorone	78591	NA	18,000	11,000 (X)	2 4E+6 (C)	NLV	NLV	NLV	NLV	1 9E+10	2 4E+6 (C)	2 4E+6
Isopropyl alcohol (I)	67630	NA	9,400	NA	1 1E+8 (C)	NLV	NLV	NLV	NLV	1 5E+10	7 0E+6	1 1E+8
Isopropylbenzene (I)	98828	NA	90,000	ID	3 9E+5 (C)	3 9E+5 (C)	1 7E+6	ID	ID	5 8E+9	3 9E+5 (C)	3 9E+5
Lead (D)	7439921	21,000	1,000 (M)	(G,M,X)	ID	NLV	NLV	NLV	NLV	1 0E+8	4 0E+5	NA
Lindane	58899	NA	20 (M)	20 (M)	3,200	ID	ID	ID	ID	ID	7,600	NA
Lithium (D)	7439932	9,800	3,400	500	1 2E+8	NLV	NLV	NLV	NLV	ID	1 0E+7	NA
Magnesium (B)	7439954	NA	8 4E+6	NA	1 0E+9 (D)	NLV	NLV	NLV	NLV	6 7E+9	1 0E+9 (D)	NA

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (V)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Manganese (R)	7439965	4.4E+5	2,000 (M)	(G,X)	2.0E+8	NLV	NLV	NLV	NLV	3.3E+6	2.0E+7	NA
Mercury (Inorganic) (R)	7439976	130	1,700	170	47,000	NLV	NLV	NLV	NLV	ID	1.3E+5	NA
Methane	74828	NA	ID	ID	ID	(K)	ID	ID	ID	ID	ID	ID
Methanol (I)	67561	NA	74,000	ID	3.1E+6 (C)	5.0E+5	3.1E+7	4.4E+7	9.6E+7	2.2E+11	3.1E+6 (C)	3.1E+6
Methoxychlor	72435	NA	1.3E+5	NA	1.4E+5	ID	ID	ID	ID	ID	2.1E+6	NA
2-Methoxyethanol (I)	109864	NA	150	ID	1.8E+7	NLV	NLV	NLV	NLV	1.3E+9	1.1E+5	1.1E+8
2-Methyl-4-chlorophenoxyacetic acid	94746	NA	390	NA	4.3E+5	NLV	NLV	NLV	NLV	ID	4.2E+5	NA
2-Methyl-4,6-dinitrophenol	534521	NA	1,700 (M)	NA	1.8E+5	NLV	NLV	NLV	NLV	ID	1.5E+5	NA
Methyl parathion	298000	NA	44	NA	66,000	NLV	NLV	NLV	NLV	ID	1.1E+5	NA
4-Methyl-2-pentanone (MIBK) (I)	108101	NA	30,000	ID	2.7E+6 (C)	2.7E+6 (C)	4.5E+7	4.5E+7	6.7E+7	1.4E+11	2.7E+6 (C)	2.7E+6
Methyl tert-butyl ether (MTBE)	1634044	NA	800	15,000 (X)	6.0E+6 (C)	6.0E+6 (C)	2.6E+7	3.0E+7	8.7E+7	2.0E+11	8.5E+5	6.0E+6
N-Methyl morpholine (I)	109024	NA	400	NA	3.2E+7	NLV	NLV	NLV	NLV	ID	3.0E+5	1.1E+8
Methylcyclopentane (I)	96377	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	3.4E+5
4,4'-Methylene bis-2-chloroaniline (MBOCA)	101144	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	8.4E+7	10,000	NA
Methylene chloride	75092	NA	100	19,000 (X)	2.2E+6	45,000	2.1E+5	5.9E+5	1.4E+6	6.6E+9	3.4E+5	2.3E+6
2-Methylnaphthalene	91576	NA	57,000	ID	7.1E+6	ID	ID	ID	ID	ID	1.5E+7	NA
2-Methylphenol	95487	NA	7,400	1,600	1.4E+7	NLV	NLV	NLV	NLV	6.7E+8	5.5E+6	NA
3-Methylphenol	108394	NA	7,400	NA	4.5E+6 (C)	NLV	NLV	NLV	NLV	ID	4.5E+6 (C)	4.5E+6
4-Methylphenol	106445	NA	740	ID	1.5E+6	NLV	NLV	NLV	NLV	ID	2.1E+6	NA
Molinate	51218452	NA	3,200	NA	4.4E+5 (C)	NLV	NLV	NLV	NLV	ID	4.4E+5 (C)	4.4E+5
Molybdenum (R)	7439987	NA	740	18,000 (X)	2.2E+7	NLV	NLV	NLV	NLV	ID	2.1E+6	NA
Naphthalene	91203	NA	17,000	850	2.0E+6	4.2E+7	4.9E+7	4.9E+7	4.9E+7	3.3E+10	1.5E+7	NA
Nickel (R)	7440020	20,000	1.0E+5	(G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	1.3E+7	3.2E+7	NA
Nitrate (R,N)	14797558	NA	2.0E+5 (N)	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	ID	NA
Nitrite (R,N)	14797650	NA	20,000 (N)	NA	4.2E+8	NLV	NLV	NLV	NLV	ID	ID	NA
Nitrobenzene (I)	98953	NA	330 (M)	3,600 (X)	1.9E+5	4.9E+5 (C)	3.9E+6	3.9E+6	3.9E+6	3.3E+9	51,000	4.9E+5
2-Nitrophenol	88755	NA	400	ID	1.4E+6	NLV	NLV	NLV	NLV	ID	1.2E+6	NA
n-Nitroso-di-n-propylamine	621647	NA	330 (M)	NA	4,400	NLV	NLV	NLV	NLV	1.6E+6	370	1.5E+6
N-Nitrosodiphenylamine	86306	NA	3,400	NA	6.0E+5	NLV	NLV	NLV	NLV	ID	5.2E+5	NA
Oxamyl	23135220	NA	4,000	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.6E+7	NA
Oxo-hexyl acetate	88230357	NA	1,500	NA	ID	ID	ID	ID	ID	5.4E+9	1.1E+6	1.0E+7
Pendimethalin	40487421	NA	1.1E+6	NA	1.1E+6	NLV	NLV	NLV	NLV	ID	5.1E+7	NA

ATTACHMENT A
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PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Pentachlorobenzene	608935	NA	29,000	NA	1.9E+5 (C)	ID	ID	ID	ID	ID	1.9E+5 (C)	1.9E+5
Pentachloronitrobenzene	82688	NA	37,000	NA	37,000	1.2E+5	2.3E+5	2.3E+5	2.3E+5	3.3E+8	3.2E+6	NA
Pentachlorophenol	87865	NA	3,200	[G,X]	2.7E+5	NLV	NLV	NLV	NLV	1.0E+8	8,100	NA
Pentane (I)	109660	NA	ID	NA	ID	2.4E+5 (C)	ID	ID	ID	1.2E+12	ID	2.4E+5
2 Pentene (I)	109682	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	2.2E+5
Phenanthrene	85018	NA	12,000	2,300	4.5E+5	1.5E+7	1.3E+5	6.2E+5	6.2E+5	1.3E+8	1.5E+6	NA
Phenol	108952	NA	88,000	4,200	1.2E+7 (C)	NLV	NLV	NLV	NLV	4.0E+10	1.2E+7 (C)	1.2E+7
Phosphorus (total)	7723140	NA	1.3E+6	NA	ID	NLV	NLV	NLV	NLV	ID	1.0E+8 (D)	NA
Picloram	1918021	NA	10,000	NA	ID	NLV	NLV	NLV	NLV	ID	3.0E+7	NA
Piperidine	110894	NA	64	NA	6.4E+5	NLV	NLV	NLV	NLV	9.3E+9	48,000	1.2E+8
Polybrominated biphenyls (J)	37324235	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	1,100	NA
Polychlorinated biphenyls (PCBs) (J,T)	1336363	NA	NLL	NLL	NLL	3.0E+6	2.4E+5	7.9E+6	7.9E+6	5.2E+6	(T)	NA
Prometon	1610180	NA	4,000	NA	4.9E+6	NLV	NLV	NLV	NLV	ID	9.3E+6	NA
Propachlor	1918167	NA	1,900	NA	8.4E+6	NLV	NLV	NLV	NLV	ID	5.5E+6	NA
Propazine	139402	NA	4,000	NA	1.7E+5	NLV	NLV	NLV	NLV	ID	1.1E+7	NA
Propionic acid (I)	79094	NA	3.6E+5	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	2.0E+10	1.1E+8 (C)	1.1E+8
Propyl alcohol (I)	71238	NA	28,000	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	4.9E+10	2.1E+7	1.1E+8
n Propylbenzene (I)	103651	NA	1,600	NA	ID	ID	ID	ID	ID	1.3E+9	1.2E+6	1.0E+7
Propylene glycol	57556	NA	3.0E+6	NA	1.0E+7 (C)	NLV	NLV	NLV	NLV	4.0E+11	1.0E+7 (C)	1.0E+7
Pyrene	129000	NA	4.7E+5	ID	4.7E+5	1.0E+9 (D)	6.5E+8	6.5E+8	6.5E+8	6.7E+8	3.2E+7	NA
Pyridine (I)	110861	NA	330 (M)	NA	37,000 (C)	1,100	8,200	40,000	97,000	2.3E+8	37,000 (C)	37,000
Selenium (D)	7782492	410	4,000	400	9.8E+7	NLV	NLV	NLV	NLV	1.3E+8	2.1E+6	NA
Silver (D)	7440224	1,000	4,500	500 (M)	2.3E+8	NLV	NLV	NLV	NLV	6.7E+6	2.0E+6	NA
Silvex (2,4,5-TP)	93721	NA	3,700	NA	2.8E+6	NLV	NLV	NLV	NLV	ID	3.2E+6	NA
Simazine	122349	NA	80	NA	90,000	NLV	NLV	NLV	NLV	ID	2.2E+6	NA
Sodium (D)	7440235	NA	3.2E+6	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.0E+8 (D)	NA
Strontium (D)	7440246	NA	92,000	15,000	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	2.7E+8	NA
Styrene (I)	100425	NA	2,700	2,200	85,000	2.4E+5	9.4E+5	9.4E+5	1.4E+6	5.3E+9	85,000	5.2E+5

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (V)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Sulfate	14808798	NA	5.0E+5	NA	ID	NLV	NLV	NLV	NLV	ID	ID	NA
Tebuthiuron	34014181	NA	10,000	NA	5.0E+7	NLV	NLV	NLV	NLV	ID	3.0E+7	NA
2,3,7,8 Tetrabromodibenzo p dioxin (O)	50585416	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	(O)	(O)	NA
1,2,4,5 Tetrachlorobenzene	95943	NA	1.5E+6	IP	1.5E+6	ID	ID	ID	ID	ID	1.4E+8	NA
2,3,7,8 Tetrachlorodibenzo p dioxin (O)	1746016	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	71	0.09	NA
1,1,1,2 Tetrachloroethane	630206	NA	660	NA	2.2E+5	12,000	57,000	65,000	1.1E+5	4.2E+8	99,000	9.8E+5
1,1,2,2 Tetrachloroethane	79345	NA	86	1,600 (X)	42,000	4,300	10,000	10,000	11,000	5.4E+7	10,000	8.7E+5
Tetrachloroethylene	127184	NA	100	900 (X)	88,000 (C)	11,000	1.8E+5	4.8E+5	1.1E+6	5.4E+9	50,000	88,000
Tetrahydrofuran (I)	109999	NA	4,600	2.2E+5 (X)	7.8E+7	1.3E+6	ID	ID	ID	3.9E+11	3.6E+6	1.2E+8
Thallium (D)	7440280	NA	2,300	4,200 (X)	1.6E+7	NLV	NLV	NLV	NLV	ID	28,000	NA
Toluene (I)	108883	NA	16,000	2,800	2.5E+5 (C)	2.5E+5 (C)	2.8E+6	3.0E+7	3.0E+7	2.7E+10	2.5E+5 (C)	2.5E+5
p Toluidine	106490	NA	660 (M)	NA	1.3E+5	NLV	NLV	NLV	NLV	1.0E+8	52,000	1.2E+6
Toxaphene	8001352	NA	2,600	960	11,000	NLV	NLV	NLV	NLV	9.7E+6	2,300	NA
Triallate	2303175	NA	95,000	NA	2.5E+5 (C)	ID	ID	ID	ID	ID	2.5E+5 (C)	2.5E+5
Tributylamine	102829	NA	7,800	ID	5.3E+5	5.8E+5	ID	ID	ID	4.7E+8	1.5E+5	3.7E+6
1,2,4 Trichlorobenzene	120821	NA	4,200	1,000	8.9E+5	1.1E+6 (C)	2.8E+7	2.8E+7	2.8E+7	2.5E+10	1.1E+6 (C)	1.1E+6
1,1,1 Trichloroethane	71556	NA	4,000	4,000	4.6E+5 (C)	2.5E+5	3.0E+6	1.4E+7	3.0E+7	6.7E+10	4.6E+5 (C)	4.6E+5
1,1,2 Trichloroethane	79005	NA	100	6,600 (X)	1.9E+5	4,600	17,000	18,000	42,000	1.9E+8	45,000	8.2E+5
Trichloroethylene	79016	NA	100	4,000 (X)	2.2E+5	7,000	78,000	1.5E+5	3.8E+5	1.8E+9	1.6E+5	5.0E+5
Trichlorofluoromethane	75694	NA	52,000	NA	5.6E+5 (C)	5.6E+5 (C)	9.2E+7	1.2E+11	1.2E+11	3.8E+12	5.6E+5 (C)	5.6E+5
2,4,5 Trichlorophenol	95954	NA	1.6E+5	NA	2.9E+7	NLV	NLV	NLV	NLV	2.3E+10	4.2E+7	NA
2,4,6 Trichlorophenol	88062	NA	11,000	700	7.9E+5	NLV	NLV	NLV	NLV	1.0E+9	9.0E+5	NA
1,2,3 Trichloropropane	96184	NA	840	NA	8.3E+5 (C)	ID	ID	ID	ID	ID	8.3E+5 (C)	8.3E+5
1,1,2 Trichloro 1,2,2 trifluoroethane	76131	NA	5.6E+5 (C)	NA	5.6E+5 (C)	5.6E+5 (C)	1.8E+8	8.0E+8	2.1E+9	5.1E+12	5.6E+5 (C)	5.6E+5
Triethanolamine	102716	NA	74,000	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	3.3E+9	5.5E+7	1.1E+8
3 Trifluoromethyl 4 nitrophenol	88302	NA	1.1E+5	NA	1.1E+8	NLV	NLV	NLV	NLV	ID	2.6E+8	NA
Trifluralin	1582098	NA	5.7E+5	NA	7.0E+6	ID	ID	ID	ID	ID	1.3E+6	NA
2,2,4 Trimethyl pentane	540841	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	19,000
2,2,4 Trimethyl 2 pentene (I)	107404	NA	ID	NA	ID	ID	ID	ID	ID	ID	ID	56,000
1,2,4 Trimethylbenzene (I)	95636	NA	2,100	ID	1.1E+5 (C)	1.1E+5 (C)	2.1E+7	5.0E+8	5.0E+8	8.2E+10	1.1E+5 (C)	1.1E+5
1,3,5 Trimethylbenzene (I)	108678	NA	1,800	ID	94,000 (C)	94,000 (C)	1.6E+7	3.8E+8	3.8E+8	8.2E+10	94,000 (C)	94,000
Triphenyl phosphate	115866	NA	1.1E+5 (C)	NA	1.1E+5 (C)	ID	ID	ID	ID	ID	1.1E+5 (C)	1.1E+5

ATTACHMENT A
SOIL: RESIDENTIAL AND COMMERCIAL I
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection			Indoor Air	Ambient Air (Y)				Direct Contact	
		#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels
Tris(2,3-Dibromopropyl)phosphate	126727	NA	43	NA	27,000 (C)	27,000 (C)	18,000	18,000	18,000	5.9E+6	5,500	27,000
Urea	57136	NA	ID (N)	NA	ID	NLV	NLV	NLV	NLV	ID	ID	NA
Vanadium (I)	7440622	NA	1.0E+6	240	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	3.7E+6	NA
Vinyl acetate (I)	108054	NA	13,000	NA	2.4E+6 (C)	7.9E+5	1.7E+6	2.6E+6	5.8E+6	1.3E+10	2.4E+6 (C)	2.4E+6
Vinyl chloride	75014	NA	40	300	5,800	28	440	3,100	7,600	3.7E+7	1,200	4.9E+5
White phosphorus (I)	12185103	NA	100 (M)	NA	64,000	NLV	NLV	NLV	NLV	ID	6,300	NA
Xylenes (I)	1330207	NA	5,600	700	1.5E+5 (C)	1.5E+5 (C)	4.6E+7	6.1E+7	1.3E+8	2.9E+11	1.5E+5 (C)	1.5E+5
Zinc (I)	7440666	47,000	2.4E+6	(G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.4E+8	NA

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

Developed under the authority of the

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED

Industrial and Commercial II, III and IV soil criteria were calculated using currently available toxicological and chemical-specific data. These criteria may change as new data become available. They are not necessarily final cleanup standards. Current criteria are available on the EHD Homepage at www.deq.state.mi.us/erd. Scientific notation is represented by E+ or E- a value, for example 2×10^6 is reported as 2.0E+6. Please refer to Operational Memorandum #6 for analytical methods and method detection limits. All values are expressed in units of parts per billion (ug/Kg). Changes made since the last revision of the tables (January 1999) are shaded.

			Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Acenaphthene	83329	NA	3.0E+5	8.7E+5	4,300	9.6E+5	3.5E+8	9.7E+7	9.7E+7	9.7E+7	6.2E+9	8.1E+8	1.0E+9 (D)	1.0E+9 (D)	NA
Acenaphthylene	208968	NA	2,900	8,500	ID	4.4E+5	3.0E+6	2.7E+6	2.7E+6	2.7E+6	1.0E+9	1.6E+7	2.3E+7	5.4E+7	NA
Acetaldehyde (I)	75070	NA	19,000	54,000	NA	1.1E+8 (C)	4.0E+5	2.1E+5	2.1E+5	2.9E+5	2.6E+8	9.7E+7	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
Acetic acid (I)	64197	NA	9.0E+5 (M)	9.0E+5 (M)	9.0E+5 (M)	6.5E+8 (C)	NLV	NLV	NLV	NLV	7.4E+9	4.2E+8	5.9E+8	6.5E+8 (C)	6.5E+8
Acetone (I)	67641	NA	15,000	42,000	34,000	1.1E+8 (C)	1.1E+6 (C)	1.6E+8	1.6E+8	2.0E+8	1.7E+11	7.4E+7	1.0E+8	1.1E+8 (C)	1.1E+8
Acetonitrile (I)	75058	NA	2,600	8,000	NA	2.2E+7 (C)	2.2E+7 (C)	1.1E+7	1.1E+7	1.2E+7	1.0E+10	1.4E+7	2.0E+7	2.2E+7 (C)	2.2E+7
Acrolein (I)	107028	NA	2,400	6,600	NA	2.3E+7 (C)	760	370	370	630	5.9E+5	1.2E+7	1.7E+7	2.3E+7 (C)	2.3E+7
Acrylamide	79061	NA	10	16	NA	1.7E+5	NLV	NLV	NLV	NLV	3.0E+6	33,000	47,000	1.1E+5	NA
Acrylic acid (I)	79107	NA	78,000	2.2E+5	NA	1.3E+8 (C)	6.1E+6	2.6E+5	2.7E+5	2.7E+5	2.9E+7	1.3E+8 (C)	1.3E+8 (C)	1.3E+8 (C)	1.3E+8
Acrylonitrile (I)	107131	NA	32	130	98 (X)	1.6E+5	35,000	17,000	17,000	31,000	5.8E+7	46,000	64,000	1.3E+5	8.3E+6
Alachlor	15972608	NA	52	52	200 (X)	ID	NLV	NLV	NLV	NLV	ID	1.9E+6	2.6E+6	6.2E+6	NA
Aldicarb	116063	NA	60	60	NA	2.4E+6	NLV	NLV	NLV	NLV	ID	4.5E+6	6.3E+6	1.5E+7	NA
Aldicarb sulfone	1646873	NA	60	60	NA	6.4E+7	NLV	NLV	NLV	NLV	ID	5.0E+6	8.2E+6	1.9E+7	NA
Aldicarb sulfoxide	1646884	NA	50 (M)	70	NA	5.2E+7	NLV	NLV	NLV	NLV	ID	5.0E+6	7.0E+6	1.6E+7	NA
Aldrin	309002	NA	NLL	NLL	NLL	NLL	7.1E+6	2.0E+5	2.0E+5	2.0E+5	8.0E+5	8,800	12,000	29,000	NA
Aluminum (D)	7429905	6.9E+6	1,000	1,000	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	3.0E+8	3.0E+8	3.0E+8	NA
Ammonia	7664417	NA	ID (N)	ID (N)	(AC)	ID	ID	ID	ID	ID	2.9E+9	ID	ID	ID	1.0E+7
Aniline (I)	62533	NA	3,000	12,000	IP	4.5E+6 (C)	NLV	NLV	NLV	NLV	2.0E+7	4.5E+6 (C)	4.5E+6 (C)	4.5E+6 (C)	4.5E+6
Anthracene	120127	NA	41,000	41,000	ID	41,000	1.0E+9 (D)	1.6E+9	1.6E+9	1.6E+9	2.9E+10	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Antimony (D)	7440360	NA	4,300	4,300	ID	5.4E+7	NLV	NLV	NLV	NLV	1.5E+8	1.6E+6	2.2E+6	5.2E+6	NA
Arsenic (D)	7440382	5,800	23,000	23,000	70,000 (X)	2.2E+6	NLV	NLV	NLV	NLV	9.1E+5	1.0E+5	1.4E+5	3.3E+5	NA
Asbestos	1332214	NA	ID	ID	NA	ID	NLV	NLV	NLV	NLV	1.0E+7 (M)	2.4E+8	3.4E+8	1.0E+9 (D)	ID
Atrazine	1912249	NA	60	60	150 (X)	32,000	NLV	NLV	NLV	NLV	ID	6.6E+5	9.5E+5	2.3E+6	NA
Azobenzene	103333	NA	1,400	5,900	NA	76,000	5.9E+5	ID	ID	ID	1.3E+8	1.4E+6	1.9E+6	4.5E+6	NA
Barium (D)	7440393	75,000	1.3E+6	1.3E+6	1.3E+5	1.0E+9 (D)	NLV	NLV	NLV	NLV	1.5E+8	3.2E+8	4.3E+8	1.0E+9 (D)	NA

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Benzene [I]	71432	NA	100	100	4,000 [X]	1.9E+5	6,400	45,000	99,000	2.3E+5	4.7E+8	4.0E+5 (C)	4.0E+5 (C)	4.0E+5 (C)	4.0E+5
Benzidine	92875	NA	1,000 (M)	1,000 (M)	ID	1,000 (M)	NLV	NLV	NLV	NLV	59,000	1,000 (M)	1,000 (M)	2,100	NA
Benzo(a)anthracene (Q)	56553	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	2.1E+5	2.9E+5	6.8E+5	NA
Benzo(b)fluoranthene (Q)	205992	NA	NLL	NLL	NLL	NLL	ID	ID	ID	ID	ID	2.1E+5	2.9E+5	6.8E+5	NA
Benzo(k)fluoranthene (Q)	207089	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	2.1E+6	2.9E+6	6.8E+6	NA
Benzo(g,h,i)perylene	191242	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	3.5E+8	1.6E+7	2.3E+7	5.4E+7	NA
Benzo(a)pyrene (Q)	50328	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1.9E+6	21,000	29,000	68,000	NA
Benzoic acid	65850	NA	6.4E+5	1.8E+6	NA	7.0E+7	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Benzyl alcohol	100516	NA	2.0E+5	5.8E+5	NA	5.8E+6 (C)	NLV	NLV	NLV	NLV	1.5E+11	5.8E+6 (C)	5.8E+6 (C)	5.8E+6 (C)	5.8E+6
Benzyl chloride	100447	NA	100	400	NA	40,000	33,000	48,000	48,000	52,000	7.0E+7	1.5E+5	2.0E+5	2.3E+5 (C)	2.3E+5
Beryllium [D]	7440417	NA	51,000	51,000	(G)	1.0E+9	NLV	NLV	NLV	NLV	1.6E+6	2.3E+7	3.2E+7	7.4E+7	NA
bis(2-Chloroethoxy)ethane	112265	NA	ID	ID	NA	ID	NLV	NLV	NLV	NLV	ID	ID	ID	ID	2.7E+6
bis(2-Chloroethyl)ether [I]	111444	NA	330 (M)	330 (M)	NA	42,000	44,000	13,000	13,000	13,000	1.2E+7	23,000	32,000	63,000	2.2E+6
bis(2-Ethylhexyl)phthalate	117817	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	8.9E+8	1.0E+7 (C)	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
Boron [D]	7440428	NA	10,000	10,000	38,000	2.6E+8	NLV	NLV	NLV	NLV	ID	2.7E+8	2.7E+8	2.1E+8	NA
Bromobenzene [I]	108861	NA	530	1,500	NA	3.0E+5	5.8E+5	5.4E+5	5.4E+5	5.4E+5	2.4E+8	7.6E+5 (C)	7.6E+5 (C)	7.6E+5 (C)	7.6E+5
Bromodichloromethane	75274	NA	2,000 (W)	2,000 (W)	ID	2.2E+5	6,400	31,000	31,000	57,000	1.1E+8	4.0E+5	5.6E+5	1.1E+6	1.5E+6
Bromoform	75252	NA	2,000 (W)	2,000 (W)	NA	8.7E+5 (C)	7.7E+5	3.1E+6	3.1E+6	3.1E+6	3.6E+9	8.7E+5 (C)	8.7E+5 (C)	8.7E+5 (C)	8.7E+5
Bromomethane	74839	NA	200	580	700	1.3E+6	1,600	13,000	57,000	1.4E+5	1.5E+8	1.0E+6	1.5E+6	2.2E+6 (C)	2.2E+6
n-Butanol [I]	71363	NA	18,000	54,000	NA	8.7E+6 (C)	NLV	NLV	NLV	NLV	1.0E+10	8.7E+6 (C)	8.7E+6 (C)	8.7E+6 (C)	8.7E+6
2-Butanone (MEK) [I]	78933	NA	2.6E+5	7.6E+5	44,000	2.7E+7 (C)	2.7E+7 (C)	3.5E+7	3.5E+7	3.6E+7	2.9E+10	2.7E+7 (C)	2.7E+7 (C)	2.7E+7 (C)	2.7E+7
n-Butyl acetate [I]	123864	NA	11,000	32,000	NA	1.1E+6 (C)	1.1E+6 (C)	ID	ID	ID	2.8E+10	1.1E+6 (C)	1.1E+6 (C)	1.1E+6 (C)	1.1E+6
t-Butyl alcohol [I]	75650	NA	78,000	2.2E+5	NA	1.1E+8 (C)	1.1E+8 (C)	ID	ID	ID	8.8E+10	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
Butyl benzyl phthalate	85687	NA	3.1E+5 (C)	3.1E+5 (C)	26,000 [X]	3.1E+5 (C)	NLV	NLV	NLV	NLV	2.1E+10	3.1E+5 (C)	3.1E+5 (C)	3.1E+5 (C)	3.1E+5
n-Butylbenzene	104518	NA	1,600	4,600	NA	ID	ID	ID	ID	ID	ID	8.2E+6	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
sec-Butylbenzene	135988	NA	1,600	4,600	NA	ID	ID	ID	ID	ID	ID	8.2E+6	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
tert-Butylbenzene [I]	98066	NA	1,600	4,600	NA	ID	ID	ID	ID	ID	ID	8.2E+6	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
Cadmium [D]	7440439	1,200	6,000	6,000	(G,X)	2.5E+8	NLV	NLV	NLV	NLV	2.2E+6	4.5E+6	6.3E+6	1.5E+7	NA
Camphene [I]	79925	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	NA
Caprolactam	105602	NA	1.2E+5	3.4E+5	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	2.9E+8	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Carbaryl	63252	NA	14,000	40,000	NA	2.6E+6	ID	ID	ID	ID	ID	4.3E+8	6.1E+8	1.0E+9 (D)	NA
Carbazole	86748	NA	860	19,000	330 (M)	3.2E+5	NLV	NLV	NLV	NLV	ID	1.2E+6	1.7E+6	3.5E+6	NA

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (V)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Carbofuran	1563662	NA	800	800	NA	6.6E+6	NLV	NLV	NLV	NLV	ID	3.7E+6	5.2E+6	1.0E+7	NA
Carbon disulfide (I,R)	75150	NA	16,000	46,000	ID	2.8E+5 (C)	1.4E+5	1.6E+6	8.0E+6	1.9E+7	2.1E+10	2.8E+5 (C)	2.8E+5 (C)	2.8E+5 (C)	2.8E+5
Carbon tetrachloride	56235	NA	100	100	900 (X)	32,000	990	12,000	34,000	70,000	1.7E+8	1.9E+5	2.7E+5	3.9E+5 (C)	3.9E+5
Chlordane (J)	57749	NA	NLL	NLL	NLL	NLL	5.9E+7	4.2E+6	4.2E+6	4.2E+6	2.1E+7	1.7E+5	2.4E+5	4.8E+5	NA
Chloride (B)	16887006	NA	5.0E+6	5.0E+6	NA	ID	NLV	NLV	NLV	NLV	ID	5.0E+5 (F)	5.0E+5 (F)	5.0E+5 (F)	NA
Chlorobenzene (I)	108907	NA	2,000	2,000	940	2.6E+5 (C)	2.2E+5	9.2E+5	1.1E+6	2.1E+6	2.1E+9	2.6E+5 (C)	2.6E+5 (C)	2.6E+5 (C)	2.6E+5
Chloroethane (I)	75003	NA	4,400	18,000	ID	9.7E+5 (C)	9.7E+5 (C)	3.6E+7	1.2E+8	2.8E+8	2.9E+11	9.7E+5 (C)	9.7E+5 (C)	9.7E+5 (C)	9.7E+5
2 Chloroethyl vinyl ether	110758	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	1.9E+6
Chloroform	67663	NA	2,000 (W)	2,000 (W)	3,400 (X)	1.5E+6 (C)	38,000	1.5E+5	3.4E+5	7.9E+5	1.6E+9	1.5E+6 (C)	1.5E+6 (C)	1.5E+6 (C)	1.5E+6
Chloromethane (I)	74873	NA	1,300	5,400	ID	1.1E+6 (C)	12,000	1.4E+5	1.2E+6	2.9E+6	6.1E+9	1.1E+6 (C)	1.1E+6 (C)	1.1E+6 (C)	1.1E+6
4 Chloro 3 methylphenol	59507	NA	5,600	16,000	NA	2.4E+6	NLV	NLV	NLV	NLV	ID	1.5E+7	2.1E+7	4.1E+7	NA
beta Chloronaphthalene	91587	NA	6.5E+5	1.8E+6	NA	2.3E+6	ID	ID	ID	ID	ID	1.9E+8	2.6E+8	5.2E+8	NA
2 Chlorophenol	95578	NA	900	2,600	440	1.6E+6	ID	ID	ID	ID	ID	4.6E+6	6.5E+6	8.1E+6 (C)	8.1E+8
o Chlorotoluene (I)	95498	NA	3,300	9,300	NA	5.0E+5 (C)	5.0E+5 (C)	ID	ID	ID	7.6E+10	5.0E+5 (C)	5.0E+5 (C)	5.0E+5 (C)	5.0E+5
Chlorpyrifos	2921882	NA	17,000	48,000	NA	8.4E+5	ID	ID	ID	ID	5.9E+7	1.4E+7	1.9E+7	4.5E+7	NA
Chromium (III) (D,I)	16065831	18,000 (total)	1.0E+9 (D)	1.0E+9 (D)	(G,X)	1.0E+9 (D)	NLV	NLV	NLV	NLV	1.5E+8	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Chromium (VI) (D,I)	18540299	18,000 (total)	30,000	30,000	3,300	3.0E+8	NLV	NLV	NLV	NLV	3.3E+5	2.2E+7	3.0E+7	7.1E+7	NA
Chrysene (Q)	218019	NA	NLL	NLL	NLL	NLL	ID	ID	ID	ID	ID	2.1E+7	2.9E+7	6.8E+7	NA
Cobalt (B)	7440484	6,800	1,000	2,000	2,000	2.2E+7	NLV	NLV	NLV	NLV	5.9E+6	2.3E+7	3.2E+7	7.4E+7	NA
Copper (B)	7440508	32,000	1.6E+8	1.6E+8	(G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	5.9E+7	1.7E+8	2.4E+8	5.6E+8	NA
Cyanazine	21725462	NA	500 (M)	500 (M)	1,100 (X)	34,000	NLV	NLV	NLV	NLV	ID	2.6E+5	3.6E+5	8.5E+5	NA
Cyanide (H)	57125	NA	4,000	4,000	400	2.5E+5 (P)	NLV	NLV	NLV	NLV	2.5E+5 (P)	2.5E+5 (P)	2.5E+5 (P)	2.5E+5 (P)	NA
Cyclohexanone (I)	108941	NA	5.2E+6	1.5E+7	NA	2.2E+8 (C)	32,000	ID	ID	ID	2.9E+10	2.2E+8 (C)	2.2E+8 (C)	2.2E+8 (C)	2.2E+8
Dacthal	1861321	NA	50,000	1.4E+5	NA	3.4E+5	NLV	NLV	NLV	NLV	ID	4.5E+7	6.3E+7	1.5E+8	NA
Dalapon	75990	NA	4,000	4,000	NA	5.9E+7 (C)	NLV	NLV	NLV	NLV	ID	5.9E+7 (C)	5.9E+7 (C)	5.9E+7 (C)	5.9E+7
4,4' DDD	72548	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	6.3E+5	8.8E+5	2.1E+6	NA
4,4' DDE	72559	NA	NLL	NLL	NLL	NLL	ID	ID	ID	ID	ID	4.4E+5	6.2E+5	1.5E+6	NA
4,4' DDT	50293	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	4.0E+7	4.4E+5	6.2E+5	1.5E+6	NA
Decabromodiphenyl ether	1163195	NA	1.4E+5	1.4E+5	NA	1.4E+5	1.0E+9 (D)	ID	ID	ID	1.0E+8	4.5E+7	6.3E+7	1.5E+8	NA
Di n butyl phthalate	84742	NA	7.6E+5 (C)	7.6E+5 (C)	11,000	7.6E+5 (C)	NLV	NLV	NLV	NLV	1.5E+9	7.6E+5 (C)	7.6E+5 (C)	7.6E+5 (C)	7.6E+5
Di(2 ethylhexyl) adipate	103231	NA	9.6E+5 (C)	9.6E+5 (C)	NA	9.6E+5 (C)	NLV	NLV	NLV	NLV	ID	9.6E+5 (C)	9.6E+5 (C)	9.6E+5 (C)	9.6E+5
Di n octyl phthalate	117840	NA	1.0E+8	1.4E+8 (C)	ID	1.4E+8 (C)	NLV	NLV	NLV	NLV	ID	8.1E+7	1.1E+8	1.4E+8 (C)	1.4E+8

ATTACHMENT A
SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV
PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Diacetone alcohol (I)	123422	NA	ID	ID	NA	ID	NLV	NLV	NLV	NLV	7.1E+10	ID	ID	ID	1.1E+8
Diazinon	333415	NA	95	280	NA	60,000	NLV	NLV	NLV	NLV	ID	3.1E+5 (C)	3.1E+5 (C)	3.1E+5 (C)	3.1E+5
Dibenzo(a,h)anthracene (Q)	53703	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	21,000	29,000	68,000	NA
Dibenzofuran	132649	NA	ID	ID	1,700	ID	ID	ID	ID	ID	ID	ID	ID	ID	NA
Dibromochloromethane	124481	NA	2,000 (W)	2,000 (W)	ID	1.9E+5	21,000	80,000	80,000	98,000	1.6E+8	3.0E+5	4.1E+5	6.1E+5 (C)	6.1E+5
Dibromochloropropane	96128	NA	4.0	4.0	NA	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200 (C)	1,200
Dibromomethane	74953	NA	1,600	4,600	NA	1.9E+6	ID	ID	ID	ID	ID	ID	ID	ID	NA
1,2 Dichlorobenzene	95501	NA	13,000	13,000	340	2.1E+5 (C)	2.1E+5 (C)	4.6E+7	4.6E+7	5.5E+7	4.4E+10	2.1E+5 (C)	2.1E+5 (C)	2.1E+5 (C)	2.1E+5
1,3 Dichlorobenzene	541731	NA	17,000	18,000	1,100	2.0E+5 (C)	ID	ID	ID	ID	ID	2.0E+5 (C)	2.0E+5 (C)	2.0E+5 (C)	2.0E+5
1,4 Dichlorobenzene	106467	NA	1,600	1,700	280	60,000	1.0E+5	2.6E+5	2.6E+5	3.4E+5	5.7E+8	1.0E+6	1.4E+6	2.9E+6	NA
3,3 Dichlorobenzidine	91941	NA	2,000 (M)	2,000 (M)	2,000 (M,X)	6,900	NLV	NLV	NLV	NLV	8.2E+6	55,000	77,000	1.5E+5	NA
Dichlorodifluoromethane	75718	NA	93,000	2.7E+5	ID	1.0E+6 (C)	1.0E+6 (C)	6.3E+7	5.5E+8	1.4E+9	1.5E+12	1.0E+6 (C)	1.0E+6 (C)	1.0E+6 (C)	1.0E+6
1,1 Dichloroethane (I)	75343	NA	18,000	50,000	IP	7.9E+5 (C)	7.9E+5 (C)	3.6E+7	9.7E+7	2.3E+8	2.4E+11	7.9E+5 (C)	7.9E+5 (C)	7.9E+5 (C)	7.9E+5
1,2 Dichloroethane (I)	107062	NA	100	100	7,200 (X)	2.2E+5	11,000	21,000	33,000	74,000	1.5E+8	2.7E+5	3.6E+5	7.6E+5	1.2E+6
1,1 Dichloroethylene (I)	75354	NA	140	140	1,300 (X)	1.8E+5	330	3,700	15,000	37,000	7.6E+7	5.8E+5 (C)	5.8E+5 (C)	5.8E+5 (C)	5.8E+5
cis 1,2 Dichloroethylene (I)	156592	NA	1,400	1,400	ID	6.4E+5 (C)	6.4E+5 (C)	4.7E+7	9.8E+7	2.3E+8	2.3E+11	6.4E+5 (C)	6.4E+5 (C)	6.4E+5 (C)	6.4E+5
trans 1,2 Dichloroethylene	156605	NA	2,000	2,000	ID	1.4E+6 (C)	1.4E+6 (C)	3.7E+7	9.6E+7	2.2E+8	2.3E+11	1.4E+6 (C)	1.4E+6 (C)	1.4E+6 (C)	1.4E+6
2,6 Dichloro 4 nitroaniline	99309	NA	44,000	1.3E+5	NA	1.4E+5	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
2,4 Dichlorophenol	120832	NA	2,600	7,700	680	1.5E+6	NLV	NLV	NLV	NLV	2.3E+9	1.0E+7 (C)	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
2,4 Dichlorophenoxyacetic acid	94757	NA	1,400	1,400	4,400	2.2E+6	NLV	NLV	NLV	NLV	2.9E+9	4.5E+7	6.3E+7	1.5E+8	NA
1,2 Dichloropropane (I)	78875	NA	100	100	5,800 (X)	1.5E+5	7,400	30,000	51,000	1.2E+5	1.2E+8	3.6E+5	5.1E+5	5.5E+5 (C)	5.5E+5
1,3 Dichloropropene (I,J)	542756	NA	94	380	NA	52,000	420	4,000	15,000	36,000	7.5E+7	1.4E+5	1.9E+5	3.8E+5	6.2E+5
Dichlorvos	62737	NA	58	240	NA	2.2E+5	NLV	NLV	NLV	NLV	1.5E+7	5.2E+5	7.2E+5	1.7E+6	2.5E+6
Dicyclohexyl phthalate	84617	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	NA
Dieldrin	60571	NA	NLL	NLL	NLL	NLL	7.3E+5	64,000	64,000	64,000	8.5E+5	9,400	13,000	31,000	NA
Diethyl ether (I)	60297	NA	100 (M)	100 (M)	ID	7.4E+6 (C)	7.4E+6 (C)	1.0E+8	1.6E+8	3.5E+8	3.5E+11	7.4E+6 (C)	7.4E+6 (C)	7.4E+6 (C)	7.4E+6
Diethyl phthalate	84662	NA	1.1E+5	3.2E+5	NA	7.4E+5 (C)	NLV	NLV	NLV	NLV	1.5E+9	7.4E+5 (C)	7.4E+5 (C)	7.4E+5 (C)	7.4E+5
Diethylene glycol monobutyl ether	112345	NA	1,800	5,000	NA	8.6E+7	NLV	NLV	NLV	NLV	5.9E+8	5.4E+7	7.6E+7	1.1E+8 (C)	1.1E+8
Diisopropylamine (I)	108189	NA	110	320	NA	3.8E+5	ID	ID	ID	ID	ID	5.7E+5	8.0E+5	1.6E+6	5.7E+6
Dimethyl phthalate	131113	NA	7.9E+5 (C)	7.9E+5 (C)	NA	7.9E+5 (C)	NLV	NLV	NLV	NLV	1.5E+9	7.9E+5 (C)	7.9E+5 (C)	7.9E+5 (C)	7.9E+5
N,N Dimethylacetamide	127195	NA	3,600	10,000	82,000 (X)	1.1E+8 (C)	NLV	NLV	NLV	NLV	ID	1.9E+7	2.6E+7	5.2E+7	1.1E+8
N,N Dimethylaniline	121697	NA	320	920	NA	3.2E+5	8.0E+5 (C)	ID	ID	ID	3.3E+8	8.0E+5 (C)	8.0E+5 (C)	8.0E+5 (C)	8.0E+5

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Dimethylformamide (I)	68122	NA	14,000	40,000	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	8.8E+8	7.1E+7	1.0E+8	1.1E+8 (C)	1.1E+8
2,4 Dimethylphenol	105679	NA	7,400	20,000	330 (M)	8.8E+6	NLV	NLV	NLV	NLV	2.1E+9	2.3E+8	3.2E+8	7.4E+8	NA
2,6 Dimethylphenol	576261	NA	330 (M)	330 (M)	NA	1.1E+5	NLV	NLV	NLV	NLV	ID	2.7E+6	3.8E+6	8.9E+6	NA
3,4 Dimethylphenol	95658	NA	330 (M)	580	NA	3.0E+5	NLV	NLV	NLV	NLV	ID	6.3E+6	8.8E+6	2.1E+7	NA
Dimethylsulfoxide	67685	NA	4.4E+6	1.3E+7	3.8E+6	1.8E+7 (C)	NLV	NLV	NLV	NLV	ID	1.8E+7 (C)	1.8E+7 (C)	1.8E+7 (C)	1.8E+7
2,4 Dinitrotoluene	121142	NA	15,000	15,000	NA	3.8E+6	NLV	NLV	NLV	NLV	2.0E+7	2.2E+5	3.1E+5	7.3E+5	NA
Dinoseb	88857	NA	290	300	NA	1.4E+5 (C)	ID	ID	ID	ID	ID	1.4E+5 (C)	1.4E+5 (C)	1.4E+5 (C)	1.4E+5
1,4 Dioxane (I)	123911	NA	1,500	6,400	56,000 (X)	3.4E+7	NLV	NLV	NLV	NLV	7.1E+8	2.3E+6	3.2E+6	6.3E+6	9.7E+7
Diquat	85007	NA	400	400	NA	1.4E+7	NLV	NLV	NLV	NLV	ID	9.9E+6	1.4E+7	3.3E+7	NA
Diuron	330541	NA	620	1,800	NA	7.5E+5	NLV	NLV	NLV	NLV	ID	1.0E+7	2.7E+7	6.4E+7	NA
Endosulfan (I)	115297	NA	NLL	NLL	NLL	NLL	ID	ID	ID	ID	ID	1.0E+6	1.5E+6	3.4E+6	NA
Endothall	145733	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1.0E+9	7.7E+7	1.1E+8	2.5E+8	NA
Endrin	72208	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	7.7E+5	1.1E+6	2.5E+6	NA
Epichlorohydrin (I)	106898	NA	1,700	7,000	NA	7.3E+6 (C)	1.2E+5	37,000	37,000	37,000	2.0E+7	2.5E+6	3.5E+6	7.0E+6	7.3E+6
Ethanol (I)	64175	NA	3.8E+7	7.6E+7	IP	1.1E+8 (C)	NLV	NLV	NLV	NLV	5.6E+11	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
Ethyl acetate (I)	141786	NA	1.3E+5	3.0E+5	NA	7.5E+6 (C)	7.5E+6 (C)	5.9E+7	5.9E+7	1.0E+8	9.4E+10	7.5E+6 (C)	7.5E+6 (C)	7.5E+6 (C)	7.5E+6
Ethylbenzene (I)	100414	NA	1,500	1,500	360	1.4E+5 (C)	1.4E+5 (C)	1.1E+7	1.4E+7	3.0E+7	2.0E+10	1.4E+5 (C)	1.4E+5 (C)	1.4E+5 (C)	1.4E+5
Ethylene dibromide	106934	NA	10 (M)	10 (M)	NA	320	3,600	5,800	5,800	9,800	1.8E+7	280	410	810	8.9E+5
Ethylene glycol	107211	NA	3.0E+5	8.4E+5	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	3.7E+10	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
Ethylene glycol monobutyl ether	111762	NA	3,900	11,000	NA	4.1E+7 (C)	ID	3.0E+5	2.7E+6	6.6E+6	7.1E+9	2.0E+7	2.8E+7	4.1E+7 (C)	4.1E+7
Fluoranthene	206440	NA	7.2E+5	7.2E+5	5,500	7.2E+5	1.0E+9 (D)	8.8E+8	8.8E+8	8.8E+8	4.1E+9	5.4E+8	7.6E+8	1.0E+9 (D)	NA
Fluorene	86737	NA	3.9E+5	8.9E+5	2,400	8.8E+5	1.0E+9 (D)	1.5E+8	1.5E+8	1.5E+8	4.1E+9	5.4E+8	7.6E+8	1.0E+9 (D)	NA
Fluoride (soluble fluoride) (II)	7782414	NA	40,000	40,000	NA	2.6E+8	NLV	NLV	NLV	NLV	ID	2.7E+8	3.8E+8	8.9E+8	NA
Formaldehyde	50000	NA	26,000	70,000	2,400	6.0E+7 (C)	65,000	43,000	69,000	1.5E+5	3.0E+8	6.0E+7 (C)	6.0E+7 (C)	6.0E+7 (C)	6.0E+7
Formic acid (I,O)	64186	NA	9.0E+5 (M)	9.0E+5 (M)	ID	1.1E+9 (C)	2.9E+6	9.0E+5 (M)	9.0E+5 (M)	9.0E+5 (M)	5.9E+7	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
1,1-Formylpyperidine	2591868	NA	1,600	4,600	NA	ID	ID	ID	ID	ID	ID	8.2E+6	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
Gentian violet	548629	NA	170	700	NA	9.8E+6	NLV	NLV	NLV	NLV	ID	1.5E+6	2.1E+6	5.0E+6	NA
Glyphosate	1071836	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	4.5E+8	6.3E+8	1.0E+9 (D)	NA
Heptachlor	76448	NA	NLL	NLL	NLL	NLL	1.9E+6	2.1E+5	2.1E+5	2.1E+5	3.0E+6	33,000	47,000	1.1E+5	NA
Heptachlor epoxide	1024573	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1.5E+6	16,000	23,000	54,000	NA
n-Heptane (I)	142825	NA	2.4E+5 (C)	2.4E+5 (C)	NA	2.4E+5 (C)	2.4E+5 (C)	ID	ID	ID	1.0E+11	2.4E+5 (C)	2.4E+5 (C)	2.4E+5 (C)	2.4E+5
Hexabromobenzene	87821	NA	5,400	5,400	ID	1.0E+7	ID	ID	ID	ID	ID	1.3E+7	1.8E+7	4.2E+7	NA

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

		#10	Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
			#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Hexachlorobenzene (C 6b)	118741	NA	1,800	1,800	ID	3,500	2 2E+5	56,000	56,000	56,000	8 5E+6	94,000	1 3E+5	3 1E+5	NA
Hexachlorobutadiene (C 4b)	87683	NA	19,000	77,000	ID	3 4E+5	3 5E+5 (C)	4 6E+5	4 6E+5	4 6E+5	1 8E+8	3 5E+5 (C)	3 5E+5 (C)	3 5E+5 (C)	3 5E+5
alpha Hexachlorocyclohexane	319846	NA	25	98	NA	2,800	6 8E+5	86,000	86,000	86,000	2 1E+6	24,000	33,000	79,000	NA
beta Hexachlorocyclohexane	319857	NA	85	350	NA	10,000	NLV	NLV	NLV	NLV	7 4E+6	83,000	1 2E+5	2 8E+5	NA
Hexachlorocyclopentadiene (C 6b)	77474	NA	36,000	36,000	ID	81,000 (C)	ID	ID	ID	ID	ID	81,000 (C)	81,000 (C)	81,000 (C)	81,000
Hexachloroethane	67721	NA	17,000	69,000	1,800 (X)	4 1E+5	3 7E+5	1 4E+6	1 4E+6	1 4E+6	1 0E+8	1 8E+6	2 5E+6	4 9E+6	NA
n Hexane (I)	110543	NA	44,000 (C)	44,000 (C)	NA	ID	44,000 (C)	ID	ID	ID	5 9E+8	44,000 (C)	44,000 (C)	44,000 (C)	44,000
2 Hexanone (I)	591786	NA	20,000	58,000	NA	2 5E+6 (C)	1 8E+6	ID	ID	ID	1 2E+9	2 5E+6 (C)	2 5E+6 (C)	2 5E+6 (C)	2 5E+6
Indeno(1,2,3 cd)pyrene (Q)	193395	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	2 1E+5	2 9E+5	6 8E+5	NA
Iron (B)	7439896	1 2E+7	6,000	6,000	NA	ID	NLV	NLV	NLV	NLV	ID	ID	ID	ID	NA
Isobutyl alcohol (I)	78831	NA	46,000	1 3E+5	NA	8 9E+6 (C)	8 9E+6 (C)	9 5E+7	9 5E+7	9 5E+7	4 4E+10	8 9E+6 (C)	8 9E+6 (C)	8 9E+6 (C)	8 9E+6
Isophorone	78591	NA	18,000	74,000	11,000 (X)	2 4E+6 (C)	NLV	NLV	NLV	NLV	8 2E+9	2 4E+6 (C)	2 4E+6 (C)	2 4E+6 (C)	2 4E+6
Isopropyl alcohol (I)	67630	NA	9,400	26,000	NA	1 1E+8 (C)	NLV	NLV	NLV	NLV	6 5E+9	4 8E+7	6 7E+7	1 1E+8 (C)	1 1E+8
Isopropyl benzene (I)	98828	NA	90,000	2 6E+5	ID	3 9E+5 (C)	3 9E+5 (C)	2 0E+6	ID	ID	2 6E+9	3 9E+5 (C)	3 9E+5 (C)	3 9E+5 (C)	3 9E+5
Lead (D)	7439921	21,000	1,000 (M)	1,000 (M)	(G,M,X)	ID	NLV	NLV	NLV	NLV	4 4E+7	9 0E+5 (draft)	4 0E+5	4 0E+5	NA
Lindane	58899	NA	20 (M)	20 (M)	20 (M)	3,200	ID	ID	ID	ID	ID	1 2E+5	1 6E+5	3 8E+5	NA
Lithium (D)	7439932	9,800	3,400	7,000	500	1 2E+8	NLV	NLV	NLV	NLV	ID	2 6E+7	2 6E+7	2 6E+7	NA
Magnesium (D)	7439954	NA	8 4E+6	2 4E+7	NA	1 0E+9 (D)	NLV	NLV	NLV	NLV	2 9E+9	1 0E+9 (D)	1 0E+9 (D)	1 0E+9 (D)	NA
Manganese (D)	7439965	4 4E+5	2,000 (M)	2,000 (M)	(G,X)	2 0E+6	NLV	NLV	NLV	NLV	1 5E+6	2 1E+8	3 0E+8	7 0E+8	NA
Mercury (inorganic) (D)	7439976	130	1,700	1,700	170	47,000	NLV	NLV	NLV	NLV	ID	1 4E+6	1 9E+6	4 5E+6	NA
Methane	74828	NA	ID	ID	ID	ID	(K)	ID	ID	ID	ID	ID	ID	ID	ID
Methanol (I)	67561	NA	74,000	2 0E+5	ID	3 1E+6 (C)	1 2E+6	3 7E+7	4 6E+7	9 7E+7	9 6E+10	3 1E+6 (C)	3 1E+6 (C)	3 1E+6 (C)	3 1E+6
Methoxychlor	72435	NA	1 3E+5	1 3E+5	NA	1 4E+5	ID	ID	ID	ID	ID	2 3E+7	3 2E+7	7 4E+7	NA
2 Methoxyethanol (I)	109864	NA	150	400	ID	1 8E+7	NLV	NLV	NLV	NLV	5 9E+8	7 4E+5	1 0E+6	2 1E+6	1 1E+8
2 Methyl 4 chlorophenoxyacetic acid	94746	NA	390	1,100	NA	4 3E+5	NLV	NLV	NLV	NLV	ID	4 5E+6	6 3E+6	1 5E+7	NA
2 Methyl 4 6 dinitrophenol	534521	NA	1,700 (M)	1,700 (M)	NA	1 6E+5	NLV	NLV	NLV	NLV	ID	1 6E+6	2 2E+6	5 2E+6	NA
Methyl parathion	298000	NA	44	130	NA	66,000	NLV	NLV	NLV	NLV	ID	1 1E+6	1 6E+6	3 7E+6	NA
4 Methyl 2 pentanone (MIBK) (I)	108101	NA	36,000	1 0E+5	ID	2 7E+6 (C)	2 7E+6 (C)	5 3E+7	5 3E+7	7 0E+7	6 0E+10	2 7E+6 (C)	2 7E+6 (C)	2 7E+6 (C)	2 7E+6
Methyl tert butyl ether (MTBE)	1634044	NA	800	800	15,000 (X)	6 0E+6 (C)	6 0E+6 (C)	3 1E+7	4 1E+7	8 9E+7	8 8E+10	6 0E+6 (C)	6 0E+6 (C)	6 0E+6 (C)	6 0E+6
N Methyl morpholine (I)	109024	NA	400	1,100	NA	3 2E+7	NLV	NLV	NLV	NLV	ID	2 0E+6	2 8E+6	5 6E+6	1 1E+8
Methylcyclopentane (I)	96377	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	3 4E+5
4 4' Methylene bis 2 chloroaniline (MBOCA)	101144	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1 1E+8	1 6E+5	2 2E+5	5 1E+5	NA

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (V)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Methylene Chloride	75092	NA	100	100	19,000 (X)	2.2E+6	2.4E+5	7.0E+5	1.7E+6	4.0E+6	8.3E+9	2.3E+6 (C)	2.3E+6 (C)	2.3E+6 (C)	2.3E+6
2-Methylnaphthalene	91576	NA	57,000	1.7E+5	ID	7.1E+6	ID	ID	ID	ID	ID	1.6E+8	2.3E+8	5.4E+8	NA
2-Methylphenol	95487	NA	7,400	20,000	1,600	1.4E+7	NLV	NLV	NLV	NLV	2.9E+9	3.7E+7	5.2E+7	1.0E+8	NA
3-Methylphenol	108394	NA	7,400	20,000	NA	4.5E+6 (C)	NLV	NLV	NLV	NLV	ID	4.5E+6 (C)	4.5E+6 (C)	4.5E+6 (C)	4.5E+6
4-Methylphenol	106445	NA	740	2,000	ID	1.5E+6	NLV	NLV	NLV	NLV	ID	2.3E+7	3.2E+7	7.4E+7	NA
Metolachlor	51218452	NA	3,200	13,000	NA	4.4E+5 (C)	NLV	NLV	NLV	NLV	ID	4.4E+5 (C)	4.4E+5 (C)	4.4E+5 (C)	4.4E+5
Molybdenum (B)	7439987	NA	740	2,000	16,000 (X)	2.2E+7	NLV	NLV	NLV	NLV	ID	2.3E+7	3.2E+7	7.4E+7	NA
Naphthalene	91203	NA	17,000	50,000	850	2.0E+6	7.7E+7	5.9E+7	5.9E+7	5.9E+7	1.5E+10	1.6E+8	2.3E+8	5.4E+8	NA
Nickel (B)	7440020	20,000	1.0E+5	1.0E+5	(G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	1.6E+7	3.4E+8	4.8E+8	1.0E+9 (D)	NA
Nitrate (B,N)	14797558	NA	2.0E+5 (N)	2.0E+5 (N)	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	ID	ID	ID	NA
Nitrite (B,N)	14797650	NA	20,000 (N)	20,000 (N)	NA	4.2E+6	NLV	NLV	NLV	NLV	ID	ID	ID	ID	NA
Nitrobenzene (I)	98953	NA	330 (M)	330 (M)	3,600 (X)	1.9E+5	4.9E+5 (C)	4.6E+6	4.6E+6	4.6E+6	1.5E+9	3.4E+5	4.8E+5	4.9E+5 (C)	4.9E+5
2-Nitrophenol	88755	NA	400	1,200	ID	1.4E+6	NLV	NLV	NLV	NLV	ID	1.3E+7	1.8E+7	4.2E+7	NA
n-Nitroso-di-n-propylamine	621647	NA	330 (M)	330 (M)	NA	4,400	NLV	NLV	NLV	NLV	2.0E+6	3,500	5,000	8,900	1.5E+6
N-Nitrosodiphenylamine	86306	NA	3,400	14,000	NA	6.0E+5	NLV	NLV	NLV	NLV	ID	5.1E+6	7.1E+6	1.4E+7	NA
Oxamyl	23135220	NA	4,000	4,000	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.7E+8	2.4E+8	5.6E+8	NA
Oxo-hexyl acetate	88230357	NA	1,500	4,200	NA	ID	ID	ID	ID	ID	2.4E+9	7.4E+6	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
Pendimethalin	40487421	NA	1.1E+6	1.1E+6	NA	1.1E+6	NLV	NLV	NLV	NLV	ID	5.4E+8	7.6E+8	1.0E+9 (D)	NA
Pentachlorobenzene	608935	NA	29,000	81,000	NA	1.9E+5 (C)	ID	ID	ID	ID	ID	1.9E+5 (C)	1.9E+5 (C)	1.9E+5 (C)	1.9E+5
Pentachloronitrobenzene	82688	NA	37,000	37,000	NA	37,000	2.2E+5	2.8E+5	2.8E+5	2.8E+5	1.5E+8	3.4E+7	4.7E+7	1.1E+8	NA
Pentachlorophenol	87865	NA	3,200	3,200	(G,X)	2.7E+5	NLV	NLV	NLV	NLV	1.3E+8	63,000	89,000	1.7E+5	NA
Pentane (I)	109660	NA	ID	ID	NA	ID	2.4E+5 (C)	ID	ID	ID	5.2E+11	ID	ID	ID	2.4E+5
2-Pentene (I)	109682	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	2.2E+5
Phenanthrene	85018	NA	12,000	34,000	2,300	4.5E+5	2.8E+7	1.5E+6	7.2E+5	7.2E+5	5.9E+7	1.6E+7	2.3E+7	5.4E+7	NA
Phenol	108952	NA	88,000	2.0E+5	4,200	1.2E+7 (C)	NLV	NLV	NLV	NLV	1.8E+10	1.2E+7 (C)	1.2E+7 (C)	1.2E+7 (C)	1.2E+7
Phosphorus (total)	7723140	NA	1.3E+6	4.8E+6	NA	ID	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Pidolam	1918021	NA	10,000	10,000	NA	ID	NLV	NLV	NLV	NLV	ID	3.2E+8	4.4E+8	1.0E+9 (D)	NA
Piperidine	110894	NA	64	180	NA	6.4E+5	NLV	NLV	NLV	NLV	4.1E+9	3.3E+5	4.6E+5	9.1E+5	1.2E+8
Polybrominated biphenyls (I)	37324235	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	17,000	24,000	56,000	NA
Polychlorinated biphenyls (PCBs) (I,T)	1336363	NA	NLL	NLL	NLL	NLL	1.6E+7	8.2E+5	2.8E+7	2.8E+7	6.5E+6	(T)	(T)	(T)	NA
Promoton	1610180	NA	4,900	14,000	NA	4.9E+6	NLV	NLV	NLV	NLV	ID	8.9E+7	1.4E+8	3.3E+8	NA
Propachlor	1918167	NA	1,900	5,400	NA	8.4E+6	NLV	NLV	NLV	NLV	ID	5.9E+7	8.2E+7	1.9E+8	NA

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Propazine	139402	NA	4,000	11,000	NA	1.7E+5	NLV	NLV	NLV	NLV	ID	1.2E+8	1.7E+8	4.0E+8	NA
Propionic acid (I)	79094	NA	3.6E+5	7.0E+5	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	8.8E+9	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
Propylalcohol (I)	71238	NA	28,000	80,000	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	2.1E+10	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
n Propylbenzene (I)	103651	NA	1,600	4,600	NA	ID	ID	ID	ID	ID	5.9E+8	8.2E+8	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
Propylene glycol	57556	NA	3.0E+6	8.4E+6	NA	1.0E+7 (C)	NLV	NLV	NLV	NLV	1.8E+11	1.0E+7 (C)	1.0E+7 (C)	1.0E+7 (C)	1.0E+7
Pyrene	129000	NA	4.7E+5	4.7E+5	ID	4.7E+5	1.0E+9 (D)	7.7E+8	7.7E+8	7.7E+8	2.0E+9	3.4E+8	4.7E+8	1.0E+9 (D)	NA
Pyridine (I)	110861	NA	330 (M)	420	NA	37,000 (C)	2,000	9,800	40,000	97,000	1.0E+8	37,000 (C)	37,000 (C)	37,000 (C)	37,000
Selenium (B)	7782492	410	4,000	4,000	400	8.8E+7	NLV	NLV	NLV	NLV	5.9E+7	2.3E+7	3.2E+7	7.4E+7	NA
Silver (B)	7440224	1,000	4,500	13,000	500 (M)	2.3E+8	NLV	NLV	NLV	NLV	2.9E+6	2.1E+7	3.0E+7	7.0E+7	NA
Silvex (2,4,5-TP)	93721	NA	3,700	3,700	NA	2.8E+6	NLV	NLV	NLV	NLV	ID	3.4E+7	4.7E+7	1.1E+8	NA
Simazine	122349	NA	80	80	NA	90,000	NLV	NLV	NLV	NLV	ID	2.3E+7	3.3E+7	7.7E+7	NA
Sodium (B)	7440235	NA	3.2E+6	9.0E+6	NA	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Strontium (B)	7440246	NA	82,000	2.6E+5	15,000	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Styrene (I)	100425	NA	2,700	2,700	2,200	85,000	5.2E+5 (C)	3.2E+6	3.2E+6	4.0E+6	6.6E+8	5.2E+5 (C)	5.2E+5 (C)	5.2E+5 (C)	5.2E+5
Sulfate	14808798	NA	5.0E+6	5.0E+6	NA	ID	NLV	NLV	NLV	NLV	ID	ID	ID	ID	NA
Tebuthiuron	34014181	NA	10,000	30,000	NA	5.0E+7	NLV	NLV	NLV	NLV	ID	3.2E+8	4.4E+8	1.0E+8 (D)	NA
2,3,7,8-Tetrabromodibenzo-p-dioxin (O)	50585416	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	(O)	(O)	(O)	NA
1,2,4,5-Tetrachlorobenzene	95943	NA	1.5E+6	1.5E+6	IP	1.5E+6	ID	ID	ID	ID	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
2,3,7,8-Tetrachlorodibenzo-p-dioxin (O)	1746016	NA	NLL	NLL	NLL	NLL	NLV	NLV	NLV	NLV	89	0.99	1.4	2.8	NA
1,1,1,2-Tetrachloroethane	630206	NA	660	26,000	NA	2.2E+5	65,000	1.9E+5	2.1E+5	3.3E+5	5.3E+8	9.5E+5	9.8E+5 (C)	9.8E+5 (C)	9.8E+5
1,1,2,2-Tetrachloroethane	79345	NA	86	340	1,600 (X)	42,000	23,000	34,000	34,000	34,000	6.6E+7	1.2E+5	1.7E+5	3.5E+5	8.7E+5
Tetrachloroethylene	127184	NA	100	100	900 (X)	88,000 (C)	60,000	6.0E+5	1.4E+6	3.3E+6	6.6E+9	88,000 (C)	88,000 (C)	88,000 (C)	88,000
Tetrahydrofuran (I)	109999	NA	4,800	14,000	2.2E+5 (X)	7.8E+7	2.4E+6	ID	ID	ID	1.7E+11	2.5E+7	3.4E+7	6.8E+7	1.2E+8
Thallium (B)	7440280	NA	2,300	2,300	4,200 (X)	1.6E+7	NLV	NLV	NLV	NLV	ID	3.0E+5	4.2E+5	1.0E+6	NA
Toluene (I)	108883	NA	16,000	16,000	2,800	2.5E+5 (C)	2.5E+5 (C)	3.0E+6	3.0E+7	3.6E+7	1.2E+10	2.5E+5 (C)	2.5E+5 (C)	2.5E+5 (C)	2.5E+5
p-Toluidine	106490	NA	660 (M)	660 (M)	NA	1.3E+5	NLV	NLV	NLV	NLV	1.3E+8	7.0E+5	1.1E+6	1.2E+6 (C)	1.2E+6
Toxaphene	8001352	NA	2,600	2,600	660	11,000	NLV	NLV	NLV	NLV	1.2E+7	23,000	32,000	63,000	NA
Triallate	2303175	NA	95,000	2.5E+5 (C)	NA	2.5E+5 (C)	ID	ID	ID	ID	ID	2.5E+5 (C)	2.5E+5 (C)	2.5E+5 (C)	2.5E+5
Tribufos,tan	102829	NA	7,800	23,000	ID	5.3E+5	1.1E+6	ID	ID	ID	2.1E+8	1.0E+6	1.5E+6	2.9E+6	3.7E+6
1,2,4-Trichlorobenzene	120821	NA	4,200	4,200	1,800	8.9E+5	1.1E+6 (C)	3.4E+7	3.4E+7	3.4E+7	1.1E+10	1.1E+6 (C)	1.1E+6 (C)	1.1E+6 (C)	1.1E+6
1,1,1-Trichloroethane	71556	NA	4,000	4,000	4,000	4.6E+5 (C)	4.6E+5 (C)	4.5E+6	1.5E+7	3.1E+7	2.9E+10	4.6E+5 (C)	4.6E+5 (C)	4.6E+5 (C)	4.6E+5
1,1,2-Trichloroethane	79005	NA	100	100	6,600 (X)	1.9E+5	24,000	57,000	57,000	1.2E+5	2.5E+8	4.4E+5	6.1E+5	9.2E+5 (C)	9.2E+5

ATTACHMENT A

SOIL: INDUSTRIAL AND COMMERCIAL II, III, AND IV

PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS

			Groundwater Protection				Indoor Air	Ambient Air (Y)				Direct Contact			
		#10	#21		#12	#13	#22	#23	#24	#25	#26	#27	#28	#29	#30
Chemical	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria	Industrial And Commercial Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Industrial and Commercial II	Commercial III	Commercial IV	Soil Saturation Concentration Screening Levels
Trichloroethylene	79016	NA	100	100	4,000 (X)	2.2E+5	37,000	2.6E+5	4.4E+5	1.1E+6	2.3E+9	5.0E+5 (C)	5.0E+5 (C)	5.0E+5 (C)	5.0E+5
Trichlorofluoromethane	75694	NA	52,000	1.5E+5	NA	5.6E+5 (C)	5.6E+5 (C)	1.1E+8	1.4E+11	1.4E+11	1.7E+12	5.6E+5 (C)	5.6E+5 (C)	5.6E+5 (C)	5.6E+5
2,4,5-Trichlorophenol	95954	NA	1.6E+5	4.6E+5	NA	2.9E+7	NLV	NLV	NLV	NLV	1.0E+10	4.5E+8	6.3E+8	1.0E+9 (D)	NA
2,4,6-Trichlorophenol	88062	NA	11,000	45,000	700	7.8E+5	NLV	NLV	NLV	NLV	1.3E+9	1.4E+7	1.9E+7	4.5E+7	NA
1,2,3-Trichloropropane	96184	NA	840	2,400	NA	8.3E+5 (C)	ID	ID	ID	ID	ID	8.3E+5 (C)	8.3E+5 (C)	8.3E+5 (C)	8.3E+5
1,1,2-Trichloro-1,2,2-trifluoroethane	76131	NA	5.6E+5 (C)	5.6E+5 (C)	NA	5.6E+5 (C)	5.6E+5 (C)	2.1E+8	8.9E+8	2.1E+9	2.3E+12	5.6E+5 (C)	5.6E+5 (C)	5.6E+5 (C)	5.6E+5
Triethanolamine	102716	NA	74,000	2.0E+5	NA	1.1E+8 (C)	NLV	NLV	NLV	NLV	1.5E+9	1.1E+8 (C)	1.1E+8 (C)	1.1E+8 (C)	1.1E+8
2,4,6-Trimethyl-4-nitrophenol	88302	NA	1.1E+5	3.1E+5	NA	1.1E+8	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA
Triforalin	1582098	NA	5.7E+5	2.3E+6	NA	7.8E+6	ID	ID	ID	ID	ID	2.0E+7	2.7E+7	6.4E+7	NA
2,2,4-Trimethyl pentane	540841	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	19,000
2,2,4-Trimethyl-2-pentene (I)	107404	NA	ID	ID	NA	ID	ID	ID	ID	ID	ID	ID	ID	ID	56,000
1,2,4-Trimethylbenzene (I)	95636	NA	2,100	2,100	ID	1.1E+5 (C)	1.1E+5 (C)	2.5E+7	6.0E+8	6.0E+8	3.6E+10	1.1E+5 (C)	1.1E+5 (C)	1.1E+5 (C)	1.1E+5
1,3,5-Trimethylbenzene (I)	108678	NA	1,800	1,800	ID	94,000 (C)	94,000 (C)	1.9E+7	4.6E+8	4.6E+8	3.6E+10	94,000 (C)	94,000 (C)	94,000 (C)	94,000
Triphenyl phosphate	115866	NA	1.1E+5 (C)	1.1E+5 (C)	NA	1.1E+5 (C)	NLV	ID	ID	ID	ID	1.1E+5 (C)	1.1E+5 (C)	1.1E+5 (C)	1.1E+5
Tris(2,3-Dibromopropyl)phosphate	126727	NA	43	160	NA	27,000 (C)	27,000 (C)	60,000	60,000	60,000	7.4E+6	27,000 (C)	27,000 (C)	27,000 (C)	27,000
Urea	57136	NA	ID (N)	ID (N)	NA	ID	NLV	NLV	NLV	NLV	ID	ID	ID	ID	NA
Vanadium (B)	7440622	NA	1.0E+6	2.0E+6	240	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	3.9E+7	5.5E+7	1.3E+8	NA
Vinyl acetate (I)	108054	NA	13,000	36,000	NA	2.4E+6 (C)	1.5E+6	2.0E+6	2.7E+6	5.9E+6	5.9E+9	2.4E+6 (C)	2.4E+6 (C)	2.4E+6 (C)	2.4E+6
Vinyl chloride	75014	NA	40	40	300	5,800	150	1,500	9,000	22,000	4.7E+7	11,000	16,000	31,000	4.9E+5
Vinyl phosphonic acid (H)	12185103	NA	100 (M)	100 (M)	NA	64,000	NLV	NLV	NLV	NLV	ID	68,000	95,000	2.2E+5	NA
Xylenes (I)	1330207	NA	5,600	5,600	700	1.5E+5 (C)	1.5E+5 (C)	5.4E+7	6.5E+7	1.3E+8	1.3E+11	1.5E+5 (C)	1.5E+5 (C)	1.5E+5 (C)	1.5E+5
Zinc (B)	7440666	47,000	2.4E+6	5.0E+6	(G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	1.0E+9 (D)	1.0E+9 (D)	1.0E+9 (D)	NA

FOOTNOTES

{A} Criterion is the State of Michigan Drinking Water Standard established pursuant to Section 5 of the Safe Drinking Water Act, Act No. 399 of the Public Acts of 1976.

{B} Background, as defined in Rule 299.5701(c), may be substituted if higher than the calculated cleanup criteria. Background levels may not exceed criteria for all inorganic compounds.

{C} Value presented is a screening level based on the chemical-specific generic soil saturation concentration (Csat) since the calculated risk-based criterion is greater than Csat. Concentrations greater than Csat are acceptable cleanup criteria for this pathway where a site-specific demonstration indicates that free-phase contaminant is not present. Consult the Generic Soil Saturation Concentrations: Technical Support Document (August 31, 1998) for further guidance on development of site-specific Csat values. Risk-based criteria are available by contacting an ERD toxicologist.

{D} Calculated criterion exceeds 100%, hence it is reduced to 100% (i.e., 1.0E+9 ppb). Evaluation of free phase contaminant, environmental impacts, adverse aesthetics and acute or local toxicity is required.

{E} Criterion is the aesthetic drinking water value, as required by Sec. 20120(1)(5).

{F} Criterion is based on adverse impacts to plant life (i.e., phytotoxicity).

{G} GSI value is pH or water hardness dependent. The Final Chronic Value (FCV) for the protection of aquatic life must be calculated based on the pH or hardness of the receiving surface water. Where water hardness exceeds 400 mg $CaCO_3$/L, use 400 mg $CaCO_3$/L for the FCV calculation. The FCV formula provides values in units of ug/L (ppb). The dissolved to total metal translator (T) is used to convert from a dissolved to a total FCV value. The generic GSI criterion is the lesser of the calculated FCV, the wildlife value (WV) and the surface water human non-drinking water value (HNDV). For these chemicals, the soil GSI protection criteria will be based on the final generic GSI criterion determined by the process described in this footnote. Contact an ERD toxicologist for further guidance.

Chemical	FCV Formula ug/L	FCV Conversion Factor (CF)	Dissolved to Total Metal Translator (T)	WV ug/L	HNDV ug/L
Beryllium	EXP(2.5279*(LnH)-10.7689)	NA	NA	NA	1,200
Cadmium	((EXP(0.7852*(LnH)-2.715))*CF(Cd))*T	CF(Cd) = 1.10167-[(LnH)*(0.04184)]	2.1	NA	130
Chromium (III)	((EXP(0.819*(LnH)+0.6848))*0.86)*T	NA	1.5	NA	9,400
Copper	((EXP(0.8545*(LnH)-1.702))*0.96)*T	NA	1.5	NA	64,000
Lead	((EXP(1.273*(LnH)-3.296))*CF(Pb))*T	CF(Pb) = 1.46203-[(LnH)*(0.14571)]	4.5	NA	190
Manganese	EXP(0.859*(LnH)+1.957)	NA	NA	NA	59,000
Nickel	((EXP(0.846*(LnH)+0.0584))*0.997)*T	NA	$1+(0.49*(SS)^{0.4281})$	NA	2.1E+5
Pentachlorophenol	EXP(1.005*(pH)-5.134)	NA	NA	NA	2.8
Zinc	((EXP(0.8473*(LnH)+0.884))*0.986)*T	NA	2.1	NA	22,000

Where,

EXP(x) = The base of the natural logarithm raised to power x (e^x).
LnH = The natural logarithm of water hardness in mg $CaCO_3$/L.
SS = Total suspended solids in mg/L
* = The multiplication symbol.

{H} Valence-specific chromium data (Cr III and Cr VI) must be compared to the corresponding valence-specific cleanup criteria. If analytical data are provided for "total" chromium only, then values for Cr VI must be applied as the cleanup criteria. Cr III cleanup criterion for protection of drinking water can only be used at sites where groundwater is prevented from being used as a public water supply, currently and in the future.

{I} Chemical may exhibit the characteristic of ignitability as defined in 40 CFR 261.21. Contact an ERD toxicologist for further direction.

{J} Chemical may be present in several isomer forms. Isomer-specific concentrations must be added together for comparison to criteria. Contact an ERD toxicologist if further explanation is needed.

{K} Chemical may be flammable and/or explosive. Criteria are under development. Contact an ERD toxicologist for further direction.

{L} Higher groundwater concentrations (up to 15 ug/L) may be acceptable if the soil concentration is less than 400 ppm and groundwater migrating off-site will not result in unacceptable exposures. Contact an ERD toxicologist if further explanation is needed.

{M} Calculated criterion is below the analytical Target Detection Limit (TDL), therefore, the criterion defaults to the TDL.

{N} The concentrations of all potential sources of nitrate-nitrogen (e.g., ammonia-N, nitrite-N, nitrate-N) must be added together and compared to nitrate criteria. Contact an ERD toxicologist if further direction is needed.

{O} All polychlorinated and polybrominated dibenzodioxins and dibenzofurans are considered as one hazardous substance. The concentration of all isomers present at a facility, expressed as an equivalent concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin based upon their relative potency, must be added together and compared to the criteria for 2,3,7,8-tetrachlorodibenzo-p-dioxin. Contact an ERD toxicologist for details.

{P} Comparison of on-site cyanide concentrations to groundwater criteria is based on amenable analysis. Comparison of cyanide concentrations to soil criteria is based on total cyanide analysis. The cyanide soil DCC of 2.5E+5 ug/kg is the EPA action level for releasable cyanide. Higher total cyanide concentrations may be acceptable if analytical data are provided to demonstrate that levels of releasable cyanide do not exceed the action level. Amendable analysis for soil leachate testing may be used to demonstrate compliance with soil criteria protective of groundwater. Alternative analytical methods may be acceptable with site-specific approval. Contact an ERD toxicologist if further direction is needed.

{Q} Criteria for carcinogenic polycyclic aromatic hydrocarbons (PAHs) were developed using "relative potential potencies" (RPPs) to benzo(a)pyrene.

{R} Chemical may exhibit the characteristic of reactivity as defined in 40 CFR 261.23. Contact an ERD toxicologist for further direction.

{S} Criterion defaults to the chemical-specific water solubility limit.

{T} Refer to the Toxic Substances Control Act (TSCA), 40 CFR 761, Subparts D and G, as amended to determine the applicability of TSCA cleanup standards. Alternatives to compliance with the standards listed below are possible under Subpart D. New releases may be subject to the standards identified in Subpart G. Use Part 201 soil direct contact criteria in the table below where TSCA standards are not applicable.

LAND USE CATEGORY	TSCA, Subpart D	PART 201
Residential & Commercial I	1,000 ppb, or 10,000 ppb if capped	1,200 ppb
Industrial & Commercial II	1,000 ppb, or 10,000 ppb if capped	9,900 ppb
Commercial III	1,000 ppb, or 10,000 ppb if capped	14,000 ppb
Commercial IV	25,000 ppb, or 50,000 ppb if fenced and marked, or 1.0E+5 ppb if capped	26,000 ppb

{U} Chemical may exhibit the characteristic of corrosivity as defined in 40 CFR 261.22. Contact an ERD toxicologist for further direction.

{V} Criterion is the aesthetic drinking water value (secondary maximum contaminant level), as required by Sec. 20120(a)(5). Higher concentrations (up to 200 ug/L) may be acceptable on a case-by-case basis. Contact an ERD toxicologist for further explanation.

{W} Concentrations of trihalomethanes in groundwater must be added together to determine compliance with the State of Michigan Drinking Water Standard of 100 ug/L. Concentrations of trihalomethanes in soil must be added together to determine compliance with the drinking water protection criterion of 2,000 ug/kg.

{X} The GSI criterion shown is not protective for surface water that is used as a drinking water source. For groundwater discharges to the Great Lakes and their connecting waters or discharges in close proximity to water supply intake(s) in inland surface waters, the generic GSI criterion is the Surface Water Drinking Water Value (SWDWV) listed in the table below except for those SWDWV indicted with an asterisk. For SWDWV with an asterisk, the generic GSI criterion is the lesser of the SWDWV, the WV and the calculated FCV (see table in footnote {G}). Soil protection criteria based on the SWDWV are listed below except for those values with an asterisk. Soil protection criteria for compounds with an asterisk are calculated based on the GSI criteria developed using the procedure described in {G}. Contact an ERD toxicologist if further guidance is needed.

Chemical	Chemical Abstract Service Number	Surface Water Drinking Water Values (SWDWV) (ug/L)	Soil Protection Criteria for SWDWV (ug/Kg)
Acrylonitrile	107131	0.87	17
Alachlor	15972608	3.5	70
Arsenic	7440382	50	16,000
Atrazine	1912249	4.3	86
Benzene	71432	12	240
Butyl benzyl phthalate	85687	6.9	1,300
Cadmium	7440439	2.5*	*
Carbon tetrachloride	56235	5.6	110
Chloroform	67663	77	1,500
Chromium (III)	16065831	120*	*
Cyanazine	21725462	10 (M)	200
3,3'-Dichlorobenzidine	91941	0.3 (M)	500
1,2-Dichloroethane	107062	6	120
1,1-Dichloroethylene	75354	24	480
1,2-Dichloropropane	78875	9.1	180

Chemical	Chemical Abstract Service Number	Surface Water Drinking Water Values (SWDWV) (ug/L)	Soil Protection Criteria for SWDWV (ug/Kg)
N,N-Dimethylacetamide	127195	700	14,000
1,4-Dioxane	123911	34	680
Hexachloroethane	67721	5.3	1,500
Isophorone	78591	310	6,200
Lead	7439921	14*	*
Methyl-tert-butyl ether (MTBE)	1634044	120	2,400
Methylene chloride	75092	47	940
Molybdenum	7439987	120	2,400
Nitrobenzene	98953	4.7	94
Pentachlorophenol	87865	1.8*	*
1,2,4,5-Tetrachlorobenzene	95943	2.8	3,300
1,1,2,2-Tetrachloroethane	79345	3.2	64
Tetrachloroethylene	127184	11	220
Tetrahydrofuran	109999	350	7,000
Thallium	7440280	1.2	910
1,1,2-Trichloroethane	79005	12	240
Trichloroethylene	79016	29	580

{Y} Source size modifiers for Soil Inhalation Criteria (SIC) for Ambient Air. Consult the Technical Support Document (TSD) for the SIC or contact an ERD toxicologist if further guidance is needed.

Source Size sq. feet or acres	Modifier
400 sq feet	3.17
1000 sq feet	2.2
2000 sq feet	1.76
1/2 acre	1
1 acre	0.87
5 acre	0.66
10 acre	0.6
32 acre	0.5
100 acre	0.43

{Z} Groundwater concentrations at or less than the health-based drinking water criterion are likely to have adverse odors. Development of an aesthetic drinking water criterion is in process. The soil health-based drinking water protection criterion may also not be protective of adverse aesthetic impacts. Adverse odors in groundwater and soil values protective of these effects must be addressed qualitatively until an aesthetic criterion is finalized.

{AA} Certain contaminants detected in groundwater may be adsorbed to particulates rather than dissolved in water. Physiochemical properties which indicate high particulate adsorption include low water solubility (S), a high water-organic carbon partition coefficient (Koc) and a high octanol-water partition coefficient (Kow). Contaminants exhibiting these characteristics are not likely to be found in the dissolved phase. For these compounds, filtered groundwater samples may be more appropriate for comparison to the GCC. Examples are some PAHs, PCBs and some pesticides.

{AB} The state drinking water standard for asbestos is in units of fibers per milliliter of water (f/mL) longer than 10 millimicrons. Soil concentrations of asbestos are determined by polarized light microscopy (PLM). Consult an ERD toxicologist if further guidance is needed.

{AC} The GSI criteria for unionized ammonia are 29 ug/L and 53 ug/L for coldwater and warmwater streams, respectively. The unionized ammonia concentration for comparison to the GSI is calculated from the measured total ammonia concentration based on pH and temperature for the receiving surface water and the discharge plume. The soil GSI PC are 580 ug/Kg and 1,100 ug/Kg for coldwater and warmwater streams, respectively. Consult an ERD toxicologist for further assistance.

ID = *Inadequate data* to develop criterion.

IP = Development of generic GSI value *in process*. This notation is used for those chemicals on the Rule 57 Water Quality Values table where the NLS (no literature search) notation is indicated for one or more of the endpoints required for development of a generic GSI. Additional work needed to address these endpoints may either be underway, or not yet initiated by the Surface Water Quality Division. Consult an ERD toxicologist for further assistance.

NA = Criterion or value is *not available* or, as is the case for Csat, *not applicable*.

NLL = Chemical is *not likely to leach* under most soil conditions.

NLV = Chemical is *not likely to volatilize* under most conditions.

MDEQ Part 111/Part 201
CONTACT INFORMATION

Person	Telephone Number	DEQ Division	Area of Expertise
David Bartley	517-373-2506	Environmental Response	Restrictive Covenants
Dale Bridgford	517-373-8375		Groundwater Modeling
Amy Brumm	517-241-3584	Waste Management	PCBs (Part 201 and TSCA) and Part 201 cleanup criteria development and application
Steve Buda	517-373-7924	Waste Management	GPRA - Michigan schedule
Ken Burda	517-373-0530	Waste Management	General - Part 111
Bill Creal	517-335-4181	Surface Water Quality	Surface Water data south of Bay City, Michigan
Steve Cunningham	231-775-3960 (Ex. 6305)	Environmental Response (Cadillac District Office)	Local Ordinances
Sharleen Getschman	517-241-0027	Waste Management	Part 111/201 Database
Sara Hession	517-241-9129	Environmental Response	Environmental Statistics
Roger Jones	517-373-4704	Surface Water Quality	Sediment Data Evaluation Questions
Deborah Mackenzie-Taylor	517-373-4797	Waste Management	Part 201 cleanup criteria development and application
Lynelle Marolf	517-373-9893	Environmental Response	Part 201 Questions; Institutional Controls
John McCabe	517-335-4789	Waste Management	Michigan Quality Assurance Plan
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David Slayton	517-373-8012	Waste Management	Michigan Soil Background; GIS
Clay Spencer	517-373-7968	Waste Management	Rule 299.9525
Ronald Stone	517-373-8012	Waste Management	Mixing Zones; Groundwater Not In An Aquifer; Groundwater Waivers
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REPLY TO:

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May 28, 1999

TO: Interested Parties

FROM: Alan J. Howard, Chief, Environmental Response Division (ERD)

SUBJECT: Revised Part 201 Operational Memorandum #18 Cleanup Criteria Tables

Attached are the revised Part 201 Operational Memorandum #18 (Op Memo #18) cleanup criteria tables and footnotes. Preceding the tables is a list of criteria changes. Replace the January 1999 criteria tables and footnotes in your hard copy of Op Memo #18 with the attached criteria tables, the footnotes, and the list of changes. The original text and Attachment B of Op Memo #18 have not changed. The revised materials are also available on the Internet via the Environmental Response Division (ERD) homepage (http://www.deq.state.mi.us/erd).

The list of changes preceding the tables is a list of hazardous substances for which criteria have changed since the January 1999 version of Op Memo #18. If the hazardous substances on the list are of interest to you, the actual values can be obtained from the tables. We will continue to provide this listing in future revisions of the criteria tables, which are scheduled every four months. Mark on your calendars that the next published revisions are scheduled for September of this year. Finalization and publication of the Op Memo #18 criteria tables and the Part 201 Training Material Criteria Tables will be synchronized. Any criteria that become available or are revised between the scheduled updates will not be considered official or final until the next publication of the criteria tables. However, anyone inquiring about new or revised criteria prior to finalization/publication of those criteria will be informed of the impending changes. These criteria will be considered draft until published. Decisions related to specific facilities can be made with the draft criteria in mind.

Questions related to the cleanup criteria can be directed to ERD's Toxicology Unit at 517-241-7651.

Attachments

cc: Flint Watt, DWRPD
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Paul Zugger, Acting Chief, STD
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